TRIPLEX NETWORK DIGITAL VIDEO RECORDER

Instruction Manual

English Version1.0

MODEL:
L224 Series

LOREX™

www.lorexcctv.com

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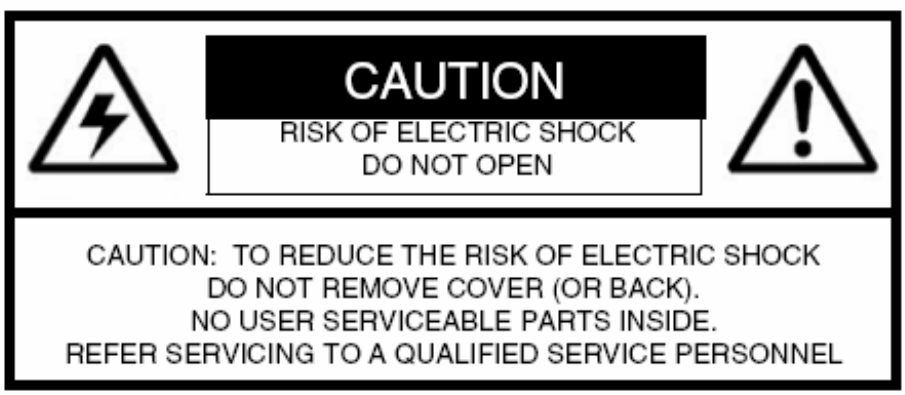
Thank you for purchasing the L224 Series Triplex Network Digital Video Recorder. Lorex is committed to providing our customers with a high quality, reliable security product.

The L224 Series DVR allows for Triplex Functionality – Record, View and Search for recoded data simultaneously, and supports up to a 500 GB Hard Drive. The system can be viewed and controlled over the internet from a remote location with trouble free access via the Free DDNS Service.

To learn more about this 4 Channel Networkable Surveillance System, and to learn about our complete range of accessory products, please visit our website at:a

http://www.lorexcctv.com


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO A QUALIFIED SERVICE PERSONNEL

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

Important Safeguards

In addition to the careful attention devoted to quality standards in the manufacture process of your video product, safety is a major factor in the design of every instrument. However, safety is your responsibility too. This sheet lists important information that will help to assure your enjoyment and proper use of the video product and accessory equipment. Please read them carefully before operating and using your video product.

Installation

1. **Read and Follow Instructions** - All the safety and operating instructions should be read before the video product is operated. Follow all operating instructions.

2. **Retain Instructions** - The safety and operating instructions should be retained for future reference.

3. **Heed Warnings** - Comply with all warnings on the video product and in the operating instructions.

4. **Polarization** - Do not defeat the safety purpose of the polarized or grounding-type plug.

   A polarized plug has two blades with one wider than the other.

   A grounding type plug has two blades and a third grounding prong.

   The wide blade or the third prong are provided for your safety.

   If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet

5. .**Power Sources** - This video product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your location, consult your video dealer or local power company. For video products intended to operate from battery power, or other sources, refer to the operating instructions.

6. **Overloading** - Do not overload wall outlets of extension cords as this can result in the risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard. Periodically examine the cord, and if its appearance indicates damage or deteriorated insulation, have it replaced by your service technician.

7. **Power-Cord Protection** - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the video product.

8. **Ventilation** - Slots and openings in the case are provided for ventilation to ensure reliable operation of the video product and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the video equipment on a bed, sofa, rug, or other similar surface. This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the video product manufacturer's instructions have been followed.

9. **Attachments** - Do not use attachments unless recommended by the video product manufacturer as they may cause a hazard.

10. **Water and Moisture** - Do not use this video product near water. For example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, near a swimming pool and the like.

    Caution: Maintain electrical safety. Powerline operated equipment or accessories connected to this unit should bear the UL listing mark of CSA certification mark on the accessory itself and should not be modified so as to defeat the safety features. This will help avoid any potential hazard from electrical shock or fire. If in doubt, contact qualified service personnel.

11. **Accessories** - Do not place this video equipment on an unstable cart, stand, tripod, or table. The video equipment may fall, causing serious damage to the video product. Use this video product only with a cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the video product. Any mounting of the product should follow the manufacturer's instructions and use a mounting accessory recommended by the manufacturer.

IMPORTANT SAFEGUARDS

Service

13. **Servicing** - Do not attempt to service this video equipment yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

14. **Conditions Requiring Service** - Unplug this video product from the wall outlet and refer servicing to qualified service personnel under the following conditions.

    A. When the power supply cord or plug is damaged.

    B. If liquid has been spilled or objects have fallen into the video product.

    C. If the video product has been exposed to rain or water.

    D. If the video product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.

    E. If the video product has been dropped or the cabinet has been damaged.

    F. When the video product exhibits a distinct change in performance. This indicates a need for service.

15. **Replacement Parts** - When replacement parts are required, have the service technician verify that the replacements used have the same safety characteristics as the original parts. Use of replacements specified by the video product manufacturer can prevent fire, electric shock or other hazards.

16. **Safety Check** - Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks recommended by the manufacturer to determine that the video product is in safe operating condition.

17. **Wall or Ceiling Mounting** - The cameras provided with this system should be mounted to a wall or ceiling only as instructed in this guide, using the provided mounting brackets.

18. **Heat** - The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

Use

19. **Cleaning** - Unplug the video product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

20. **Product and Cart Combination** - Video and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the video product and car combination to overturn.

21. **Object and Liquid Entry** - Never push objects for any kind into this video product through openings as they may touch dangerous voltage points or "short-out" parts that could result in a fire or electric shock. Never spill liquid of any kind on the video product.

22. **Lightning** - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power line surges.

IMPORTANT SAFEGUARDS

NOTE

This equipment has been certified and found to comply with the limits regulated by FCC, EMC, and LVD. Therefore, it is designated to provide reasonable protection against interference and will not cause interference with other appliance usage.

However, it is imperative that the user follows this manuals guidelines to avoid improper usage which may result in damage to the unit, electrical shock and fire hazard injury

In order to improve the feature functions and quality of this product, the specifications are subject to change without notice from time to time.

FCC CLASS B NOTICE

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (which can be determined by turning the equipment on and off), the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio or television technician for assistance

General Precautions

1. All warnings and instructions of this manual should be followed
2. Remove the plug from the outlet before cleaning. Do not use liquid aerosol detergents. Use a water dampened cloth for cleaning
3. Do not use this unit in humid or wet places
4. Keep enough space around the unit for ventilation. Slots and openings in the storage cabinet should not be blocked
5. During lightning storms, or when the unit is not used for a long time, disconnect the power supply, antenna, and cables to protect the unit from electrical surge

TABLE OF CONTENTS

PARTS AND FEATURES

1.1 FEATURES ---- 1
1.2 PACKAGE CONTENTS ---- 2
1.3 SPECIFICATION ---- 3-4
1.4 FRONT PANEL ---- 5-7
1.5 REAR PANEL ---- 8

GETTING STARTED

2.1 GETTING STARTED ---- 9

BASIC OPERATION

3.1 RECORDING ---- 10
3.2 PLAYBACK ---- 11

DETAILED MENU CONFIGURATION

4.1 MENU TREE ---- 12
4.2 MAIN MENU OPTIONS_ RECORD ---- 13
4.3 MAIN MENU OPTIONS_ TIMER ---- 14
4.4 MAIN MENU OPTIONS_ DATE ---- 15
4.5 MAIN MENU OPTIONS_ ADVANCE ---- 16
4.6 ADVANCE MENU_ CAMERA ---- 16
4.7 ADVANCE MENU_ DETECTION ---- 18
4.8 ADVANCE MENU_ DISPLAY ---- 19
4.9 ADVANCE MENU_ ALERT ---- 20
4.10 ADVANCE MENU_ REMOTE ---- 21
4.11 ADVANCE MENU_ SYSTEM ---- 22
4.12 ADVANCE MENU_ NETWORK ---- 23
4.13 ADVANCE MENU_ BACKUP ---- 24
4.14 ADVANCE MENU_ HDD INFO ---- 25
4.15 ADVANCE MENU_ EVENT LOG ---- 25

ADDITIONAL OPERATION

5.1 SEARCH ---- 26
5.2 KEY LOCK ---- 27
5.3 SWITCH N/P SYSTEM ---- 27
5.4 R.E.T.R. ---- 27
5.5 USB UPGRADE---- 28
5.6 LICENSED SOFTWARE AP---- 28
- **INSTALL THE SOFTWARE AP** ---- 28
- **AP BASIC OPERATION** ---- 29
- **AP ADVANCED SETTING** ---- 34
  - **NETWORK** ---- 34
  - **DDNS** ---- 35
  - **MAIL** ---- 36
  - **FTP** ---- 36
  - **DVR-CAMERA SETTING** ---- 37
  - **DEVICE** ---- 37
  - **DETECTION** ---- 38
  - **NETWORK BACKUP & PLAYBACK** ---- 39
  - **SEARCH LIST** ---- 40
  - **TIMER RECORD** ---- 41
  - **DATE** ---- 42
  - **RECORD SETTING** ---- 42
  - **ALARM** ---- 43
  - **ALARM LIST** ---- 43
  - **GENERAL** ---- 43
  - **ACCOUNT** ---- 44
  - **ONLINE USER INFO** ---- 44
  - **FILE PATH** ---- 44

5.7 OPERATION VIA IE BROWSER ---- 45

TROUBLESHOOTING

6.1 FAQ ---- 46

APPENDIX #1 **INSTALL HDD** ---- 47
APPENDIX #2 **PIN CONFIGURATION** ---- 48
APPENDIX #3 **RS232 PROTOCOL** ---- 49
APPENDIX #4 **RECORDING TIME TABLE** ---- 50
APPENDIX #5 **COMPATIBLE USB FLASH DRIVE BRAND** ---- 51
APPENDIX #6 **COMPATIBLE HDD BRAND** ---- 52

1.1 FEATURES

L224 SeriesTechnology

- Compression format providing crystal clear images with real time performance

Multiplex

- Allow live display, record, playback, backup, and network at the same time

Backup Function:

- Supports image backup with USB flash drives, network remote recording and backup

Remote Surveillance:

- Support remote surveillance with licensed software Application and IE Browser
- Web surveillance by up to 5 users simultaneously

Intelligent Motion Trigger Recording:

- With advanced motion detection function, scheduled motion detection recording (4 different adjustable factors for motion detection sensitivity) and convenient search function, customized security environments are achieved
- Alarm trigger recording will send alerts with images to designated e-mails and the FTP address
- Support pre-alarm recording (8MB)

Covert Recording:

- A mask replaces the live image with a blank screen, and the monitor shows nothing but recording is still on

A/V Support:

- Support 1 audio-in, 1 audio-out to record sounds
- Support VGA output to monitor (optional)

General:

- Support multi-language OSD
- Supports IR remote control
- System auto recovery after power reconnected
- Support daylight saving function
- Support manual / timer / motion / alarm / network remote recording functions
- Watermark function ensures authentication of recorded images
- Support TCP/IP, PPPOE, DHCP and DDNS network connection

1.2 CONTENTS

L224 Series DVR with Remote Control

Power Adapter

Manual and Software CD

CHECK YOUR PACKAGE TO CONFIRM THAT YOU HAVE RECEIVED THE COMPLETE SYSTEM, INCLUDING ALL COMPONENTS SHOWN ABOVE.

1.3 SPECIFICATIONS

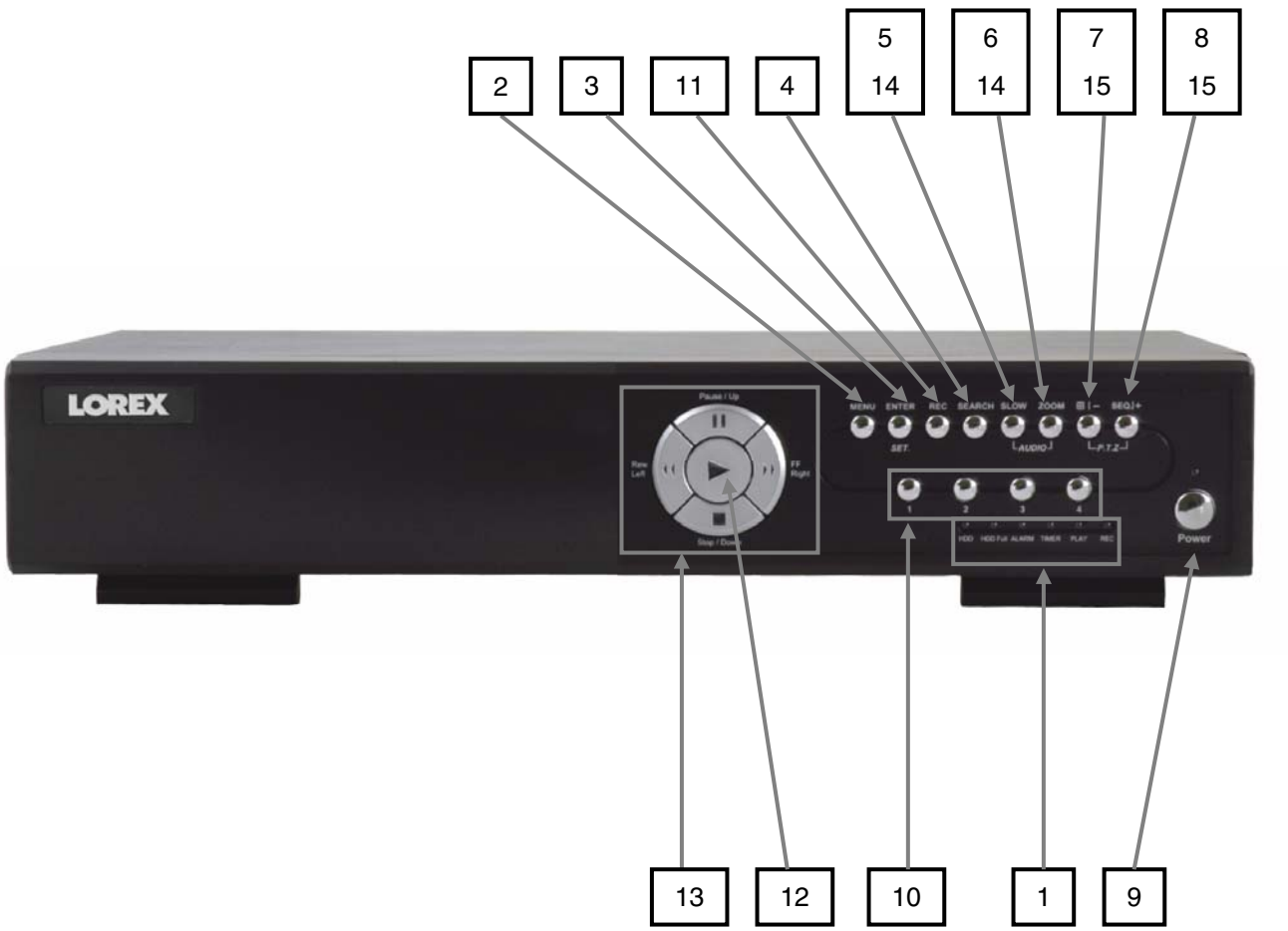
Video System	NTSC / PAL (switchable)
Video Compression Format	Frame: MJPEG ; CIF: MPEG4
Video Input	4 Channels. Composite video signal 1 Vp-p 75Ω BNC
Video Loop Out	4 Channels. Composite video signal 1 Vp-p 75Ω BNC
Video Output	Main Monitor Output: Composite video signal 1 Vp-p 75Ω BNC Call Monitor Output: Composite video signal 1 Vp-p 75Ω BNC
Maximum Recording Rate	Frame: 720 × 480 pixels with 30 IPS〈NTSC〉 / 720 × 576 pixels with 25 IPS 〈PAL〉 CIF: 352 × 240 pixels with 120 IPS〈NTSC〉/ 352 × 288 pixels with 100 IPS 〈PAL〉
Adjustable Recording Speed	Frame: 30, 15, 7, 3 IPS <NTSC> / 25, 12, 6, 3 IPS <PAL> CIF: 120, 60, 30, 15 IPS <NTSC> / 100, 50, 25, 12 IPS <PAL>
Multi-language OSD	YES
Image Quality Setting	Best, High, Normal, and Basic
Hard Disk Storage	IDE type, ATA66, supported HDD * 1 , support HDD capacity over 500GB
HDD Quick Cleaning	Quick clean up the “index system” of the recorded files. 500GB under 2 seconds
Recording Mode	Manual / Timer / Motion / Alarm / Remote
Watermark	YES
Refresh Rate	120 IPS for NTSC / 100 IPS for PAL
Audio I/O	1 audio input, 1 audio output (Mono)
R.E.T.R. (Remote Event Trigger Recording)	YES
Motion Detection Area	16 × 12 grids per camera for all channels
Motion Detect Sensitivity	4 adjustable variables with precise calculation for motion detection
Pre-alarm Recording	YES (8MB)
USB Interface	Support USB 1.1/ 2.0 flash drive
Backup Device	Support USB 1.1/ 2.0 flash drive and network remote backup

1.3 SPECIFICATIONS

Specification Continued…	
Web Transmitting Compression Format	Motion JPEG
Ethernet	10/100 Base-T. Support remote control and live view via Ethernet
Web Interface	Support licensed software AP and IE browser
Remote Alarm Notification	E-mail images, and upload images to FTP site's specific account
Network Connection	Support TCP/IP, PPPOE, DHCP and DDNS functions
PTZ control	Support PELCO-D protocol
IR Transmitter	YES
Dwell Time (Sequential Channel Switch)	Programmable with adjustable dwell time
Alarm I/O	4 inputs, 1 output
Digital Zoom	2X digital zoom (live mode)
Key Lock	YES
Video Loss Detection	YES
Camera Title	Support up to 6 letters
Video Adjustable	Hue / Color / Contrast / Brightness
Date Display Format	YY/MM/DD, DD/MM/YY, MM/DD/YY, and Off
Power Source	DC 19V
Power Consumption	< 42 W
Operating Temperature	10℃ ~ 40℃ (50℉~104℉)
Dimensions (mm)	MODEL 4: 345mm (W) x 68.3mm (H) x 225mm (D)
System Recovery	System auto recovery after power reconnected
Optional Peripheral	VGA converter

❑ The specifications of the actual products are subject to change without further notification.

1.4 FRONT PANEL



1.4 FRONT PANEL

1) "**LED LIGHT**" :

HDD: HDD is reading or recording
HDD Full: HDD is full.
ALARM: Once the alarm is triggered
TIMER: When timer recording is turned on
PLAY: Under playing status
REC: Under recording status

2) "**MENU**" :
Press "MENU" button to enter the main menu.

3) "**ENTER**" / "**SET**" :
Press "ENTER" button to confirm the setting.
Press "SET" to change the position of the channel display.
Press "▲▼◄►" to select the channel which you would like to change.
Press " **+** " or " - " to select the channel which You would like to show.

4) "**SEARCH"** :
Press "SEARCH" button to enter the search menu.

5) "SLOW" :
Under the playback mode, press "SLOW" button to show slow playback.

6) "**ZOOM**" :
Press "ZOOM" button to enlarge the picture of selected channel (under the live mode).

7) " ⊞ " / " - " :
Press " ⊞ " button to show the 4 channel display mode.
Press " - " button to change the setting in the menu.

8) "**SEQ**" / " **+** " :
Press "SEQ" button to activate the call monitor function and press "SEQ" button again to escape the call monitor mode.
Press " **+** " button to change the setting in the menu.

9) " ⏻ " **or** "**Power**" :
Press this button to turn on / off the DVR.
(Under the recording mode, please stop recording before turning off the DVR).

1.4 FRONT PANEL

10) "**CH1** " "**CH2** " "**CH3** " "**CH4** " :
Press "**1** " "**2** " "**3** " "**4** " buttons to select the channel to display.

11) "**REC**" :
Press "REC" button to activate the manual recording.

12) " ▷ " **or** "**PLAY**" :

Press this button to playback the recorded data.

13) "**UP** / **PAUSE** , **DOWN** / **STOP**, **LEFT** / **FAST REWIND**, **RIGHT** / **FAST FORWARD**" :
Press "▲▼◄►" to move the cursor up / down / left / right.

Under the playback mode, press " ▮▮ " button to pause playback.
Under the playback mode, press " ■ " button to stop playback.
Under the playback mode, press "►►" button to fast forward.
Under the playback mode, press "◄◄" button to fast rewind.

14) " SLOW ZOOM AUDIO " or " AUDIO " :

Press these two buttons to select live or playback sounds of the audio channels.

15) " ⊞ − SEQ. + P.T.Z " or " P.T.Z. " :

Press these two buttons at the same time to enter / exit the PTZ control mode.
In the PTZ control mode,
* Zoom in : Press " **+** " button
* Zoom out: Press " - " button
* Adjust PTZ angle: Press "UP, DOWN, LEFT, RIGHT" buttons

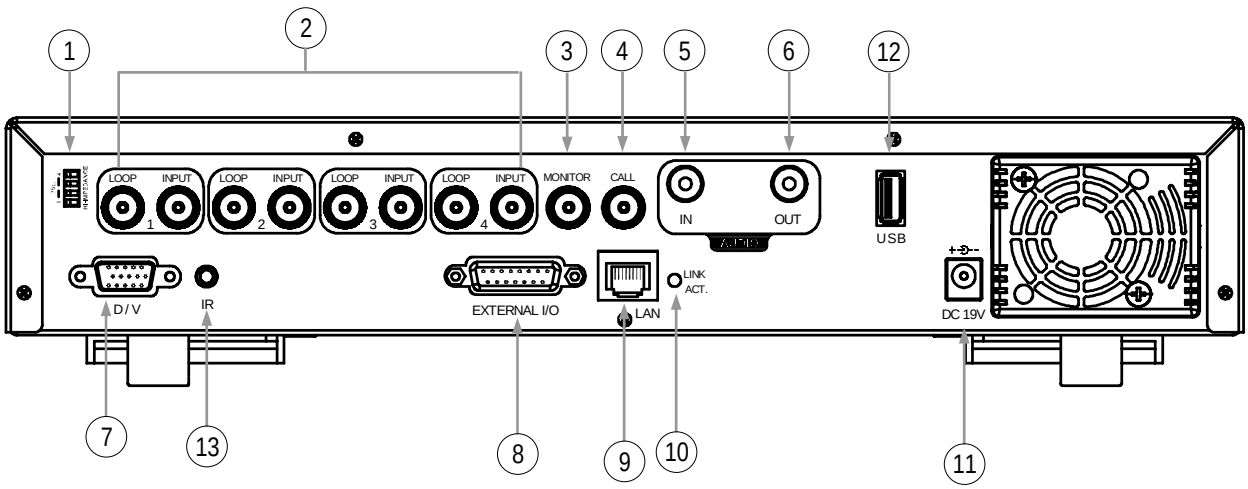
16) Switch to PAL System:
Press " ⏻ " **or** "**Power**" button on the DVR front panel to shutdown. Then, press and hold "►" first, and press " ⏻ " **or** "**Power**" to switch to PAL system.
(Press the buttons until the monitor shows video images)

Switch to NTSC System:
Press " ⏻ " **or** "**Power**" button on the DVR front panel to shutdown. Then, press and hold "◄" first, and press " ⏻ " **or** "**Power**" to switch to NTSC system.
(Press the buttons until the monitor shows video images)

Note: Only Model 1 & 2 & 5 need to be manually switched between PAL and NTSC systems. Model 3 & 4 will automatically detect PAL/NTSC system.

17) Press "MENU" + "ENTER" buttons on the DVR front panel to lock keys and to log in another username.

1.5 REAR PANEL



1) 75Ω / HI-IMPEDANCE:
When using Loop function, please switch to HI-IMPEDANCE. When you don't use Loop function, please switch to 75Ω.

2) VIDEO INPUT (CHANNEL 1 - 4): Connect to video sources, such as cameras.
LOOP (CHANNEL 1 - 4): Video output.

3) MONITOR:
Connect to Main monitor.

4) CALL MONITOR:
Connect to CALL monitor. Show the channel switch display. When the alarm is triggered, the call monitor will show the image of the triggered channel for a period of time.

5) AUDIO IN (1 audio-in):
Connect to audio sources, such as cameras equipped with the audio function.
When users start the recording function, the audio input will be recorded.

6) AUDIO OUT:
Connect to a monitor or speaker.
With 1 mono audio output from the same source.

7) D/V PORT (Digital Video Port):
Connect to a VGA converter.

8) EXTERNAL I/O PORT:
Insert the supplied 15PIN DSUB to this port for connecting external devices (alarm input, external alarm, PTZ camera).
For detailed I/O port PIN configuration, please refer to Appendix #2.

9) LAN:
Connect to Internet by LAN cable.

10) LINK / ACT LED light:
When the Internet is activated, the LED light will be on

11) POWER:
Connect to the supplied adapter.

12) USB:
Support USB flash drive firmware update and file backup.

13) IR PORT:
Connect the IR receiver for remote control.

2.1 GETTING STARTED

Connect all the devices:

1) Install HDD:
The HDD must be installed before the DVR is turned on. Please refer to Appendix #1 for HDD installation instructions.

2) Connect cameras, monitors and external devices. Please refer to the section "1.5 REAR PANEL" for connection, and Appendix#2 for pin configurations of the external I/O port.

NOTE:
Be sure the cameras are connected and power-supplied before the DVR is powered on. Otherwise the DVR will not be able to detect N/P system automatically.

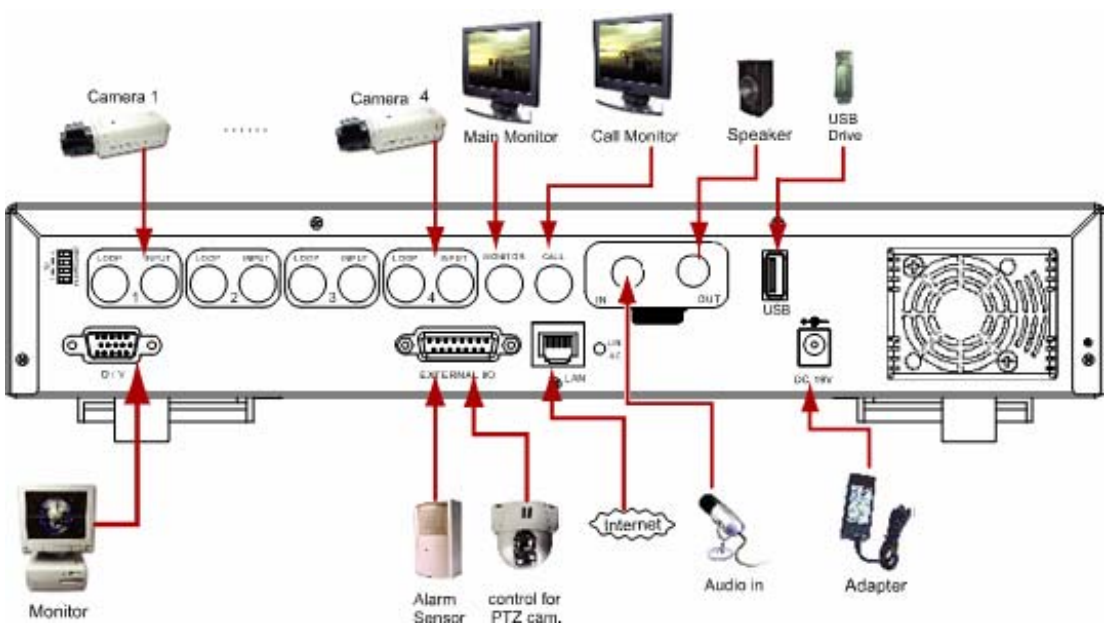
3) Connect the AC power cord to power adapter and plug into an electrical outlet.
The "⏻" or "Power" LED will be on as red.
Press the "⏻" or "Power" button. The "⏻" or "Power" LED will be on as green.
It takes approximately 10 to 15 seconds to boot the system.

4) Set the date and time on your DVR. Please **DO NOT** change the date or time on your DVR after the recording function is activated. The recorded data will be disordered and you will not be able to find the recorded file to backup by time search.

NOTE:
If users change the date or time accidentally when the recording function is activated, it's recommended to clear all HDD data, and start recording again.

For the connection application, please see the illustration below for an example.

Take Model 1 as an example



3.1 RECORDING

The DVR offers three recording modes, manual record, event record and timer record. If power is off accidentally, recorded video files will still be still stored in the HDD. DVR will return to the original recording status after power is on again.

1) MANUAL RECORDING (continuous recording) :
   Recording is initiated by manually pressing the “REC” button, indicated by the sign “●” on the screen.

2) EVENT RECORDING (triggered by motion and external alarm) :
   When this function is activated, the recording is triggered by motion or external alarms, indicated by the sign " " (motion) or " " (external alarm) on the screen.

3) TIMER RECORDING (scheduled time) :
   Recording is scheduled by Timer, indicated by the sign “**TIMER RECORD**”.

There must be at least 8192 images of recorded data for playback to work properly. If not, your DVR will stop the playback. For example, if the IPS is set to 30, the recording time should be at least 273 seconds (8192 images / 30 IPS) for the playback to work properly.

When the recording function is activated, please **DO NOT** change the date or time on your DVR. The recorded data will be disordered and you will not be able to find the recorded file to backup by time search.

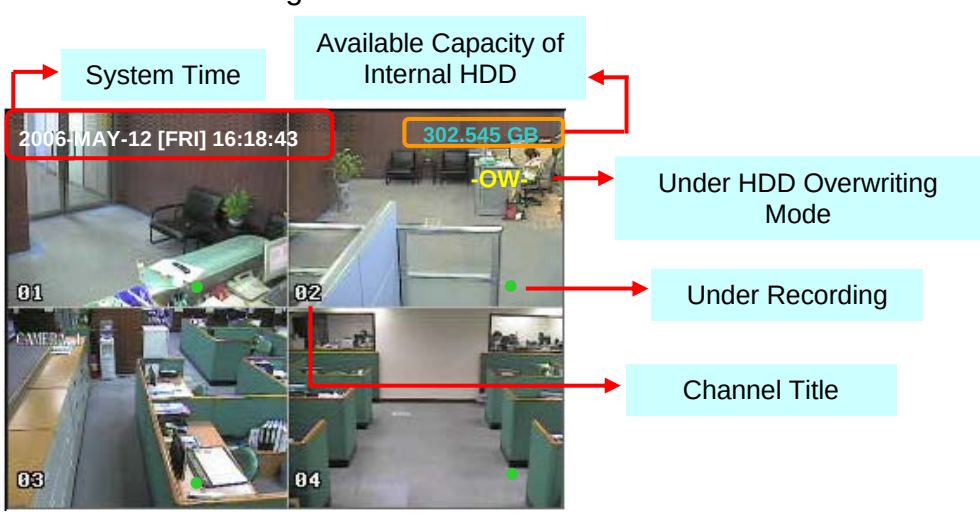
NOTE:

If users change the date or time accidentally when the recording function is activated, it’s recommended to clear all HDD data, and start recording again.

Overwriting View

If you activate overwriting mode, you will also see “-OW-” under the recording mode except the system time, available HDD capacity, recording icon and channel title.

When the HDD is full under “-OW-” recording mode, the previous recorded data may be overwritten without further warning notice. Your DVR will clear 8GB data from the oldest for overwriting once the HDD is full.



3.2 PLAYBACK

Press " ▷ " or "PLAY" button and the DVR will display the last recorded video.

1) FAST FORWARD (F.F.) & FAST REWIND (REW):

You can increase the speed for fast forward and rewind on the DVR.
In the playback mode,

* Press "►►" once to get 4X speed forward and press twice to get 8X speed, etc., and the maximum speed is 32X.
* Press "◄◄" once to get 4X speed rewind and press twice to get 8X speed, etc., and the maximum speed is 32X.
* The type of the recording image size (Frame or CIF) will also be shown on the screen.

2) PAUSE / IMAGE JOG:

Press " ▮▮ " button to pause the current image displayed on the screen.
In the Pause mode,

* Press "►► " once to get one frame forward.
* Press "◄◄ " once to get one frame rewind.

3) STOP:

Pressing " ■ " button under all circumstances will return DVR to live monitoring mode.

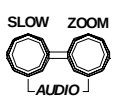
4) CHANNEL SHIFT ⊞

* Display mode:
  Press MODE " ⊞ " button to 4 channels display.
* Full Screen Switch:
  Press "**1** " "**2** " "**3** " "**4** " buttons to show the full screen channels.
* Channel display switch:
  Press "SET" to change the the position of the channel display.
  Press "▲▼◄►" to select the channel you would like to change.
  Press " **+** " or " - " to select the channel you would like show.
  Press "ENTER" button to confirm the setting.

5) SLOW PLAYBACK:

Press "**SLOW**" button to get 1/2X speed playback.

6) AUDIO:

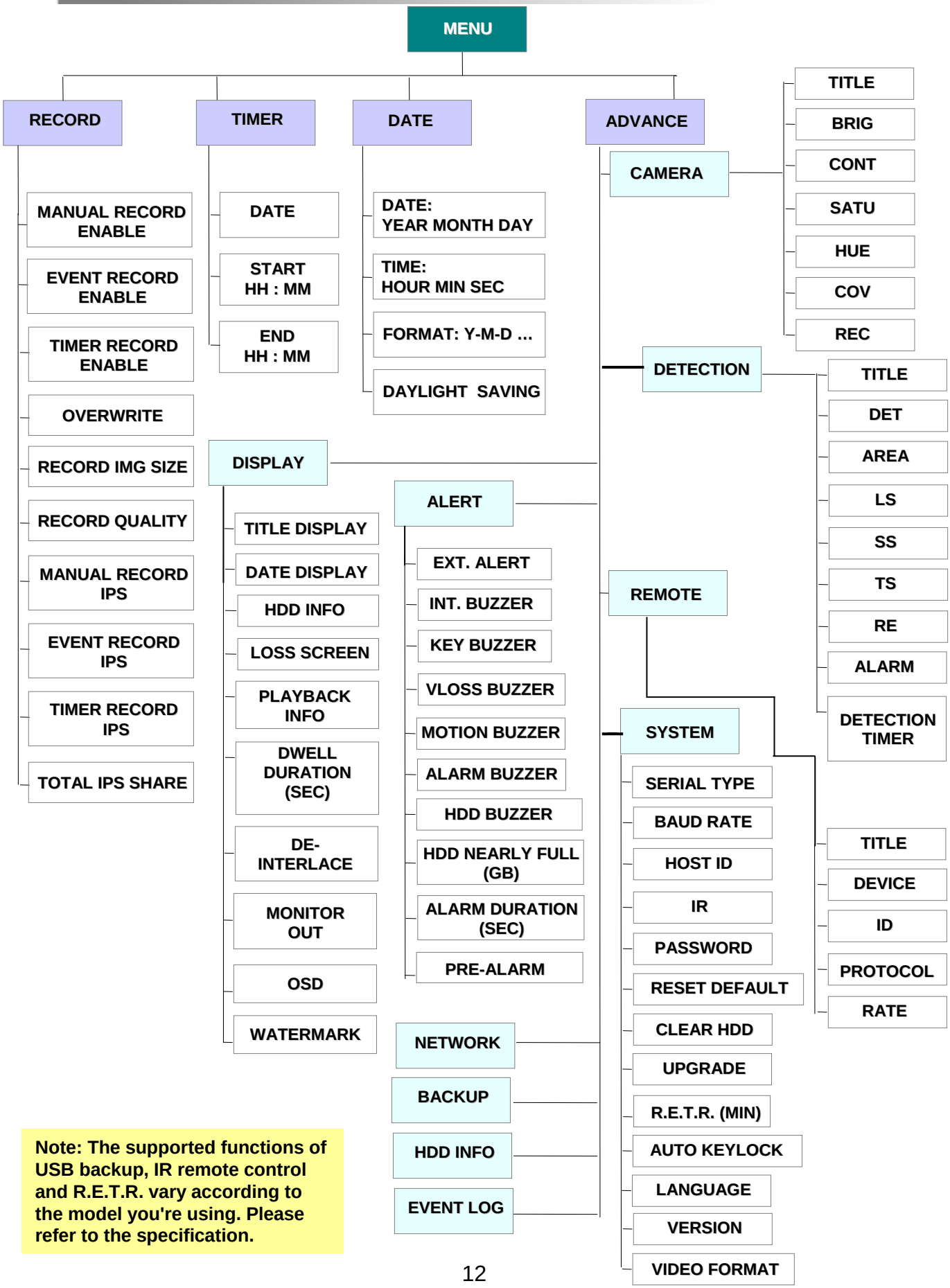
Press " 

" or "

" to select one audio channel from the following options:

AUDIO 1 (L) – 1st audio channel, live audio
* AUDIO 1 (P) – 1st audio channel, playback audio

4.1 MENU TREE

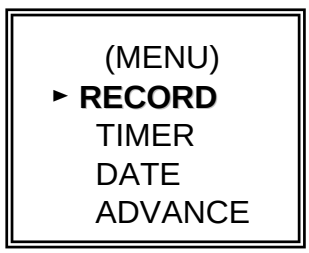


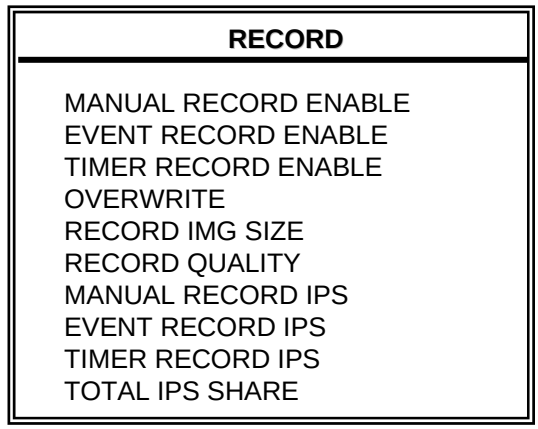
Note: The supported functions of USB backup, IR remote control and R.E.T.R. vary according to the model you're using. Please refer to the specification.

4.2 MAIN MENU OPTIONS__RECORD

Press “MENU” button to enter the main menu list. **The default admin password is 0000.** Enter the default password and press “ENTER”. (Users could alter the password later. Please refer to the section “4.11 ADVANCED MENU SYSTEM”)

Move the cursor to “RECORD” and press ”ENTER”. The screen will show the following options.





Use the following buttons for menu settings:

“▲▼◄► “ to move the cursor.

“ + ”, “ - ” to choose the numbers / selections.

“ ENTER “ to go to the submenu / to confirm the selection

“ MENU “ to go to the menu OSD /
to confirm the change / to exit the menu OSD

1) MANUAL RECORD ENABLE:
Start / stop the manual recording function.

2) EVENT RECORD ENABLE:
Start / stop the event recording function. When this function is activated, the recording will be triggered by the motion or external alarm.

3) TIMER RECORD ENABLE:
Start / stop the timer recording function.

4) OVERWRITE:
Select to overwrite previous recorded videos in HDD. When the HDD is full under O/W recording mode, previous recorded files will be overwritten without further warning notices.

5) RECORD IMG SIZE:
There are two recording options, FRAME and CIF. When changing the record image size, users need to stop recording first.

6) RECORD QUALITY:
There are four quality settings: BEST, HIGH, NORMAL & BASIC.

7) MANUAL RECORD IPS:
Recording is activated by pressing the “REC” button. Select the images per second of MANUAL RECORD, The options are as following:
NTSC: FRAME: 30, 15, 7, 3 PAL: FRAME: 25, 12, 6, 3
CIF: 120, 60, 30, 15 CIF: 100, 50, 25, 12

8) EVENT RECORD IPS:

Recording is activated by events (alarm and motion trigger). Select the images per second for EVENT RECORD. The options are as following:

NTSC: FRAME: 30, 15, 7, 3 PAL: FRAME: 25, 12, 6, 3
CIF: 120, 60, 30, 15 CIF: 100, 50, 25, 12

9) TIMER RECORD IPS:

Recording is activated by timer schedules. Select the images per second for TIMER RECORD. The options are as following:

NTSC: FRAME: 30, 15, 7, 3 PAL: FRAME: 25, 12, 6, 3
CIF: 120, 60, 30, 15 CIF: 100, 50, 25, 12

10) TOTAL IPS SHARE:

There are two IPS settings:

FIX:

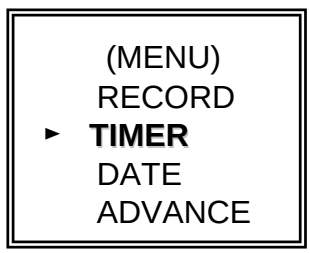
IPS per channel = RECORD IPS ÷ 4 channels

GROUP (Suitable for Frame mode):

IPS per channel = RECORD IPS ÷ number of channels under recording.

NOTE: The total IPS share is always “FIX”.

4.3 MAIN MENU OPTIONS__TIMER



Move the cursor to “TIMER” and press ”ENTER”. The screen will show the following options.

RECORD

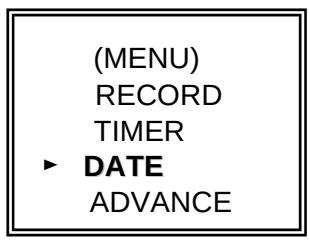
DATE	START		END
OFF	00 : 00	-	00 : 00
DAILY	08 : 00	-	18 : 00
SUN	06 : 00	-	23 : 00
MON-FRI	00 : 00	-	00 : 00
OFF	00 : 00	-	00 : 00
OFF	00 : 00	-	00 : 00
OFF	00 : 00	-	00 : 00

1) DATE:
Select scheduled record days (SUN/MON/TUE/ WED/ THU/ FRI/ SAT/ MON–FRI / SAT-SUN / DAILY/OFF) to set up timer record schedules.
NOTE 1 : Specific days could be changed by " + " or " - " button.
NOTE 2 : If you plan to set the timer recording across the midnight, there are two ways for setting the timer recording schedule. Please follow the instructions below.
Example 1 : If you only want to set the recording timer schedule from every Sunday 23:30 to Monday 23:30, then you could set the recording timer schedule as Sunday from 23:30 to 23:30.
Example 2 : If you plan to set the timer recording from Sunday 08:00 to Monday 15:00, then you could set the recording timer schedule as Sunday from 08:00 to 24:00, and Monday 24:00 to 15:00.
Note: Please turn on "TIMER RECORD ENABLE" in RECORD" menu (see P.14).

2) START:
Select the start time for the recording.

3) END:
Select the finish time for the recording.

4.4 MAIN MENU OPTIONS__DATE



Move the cursor to "DATE" and press "ENTER". The screen will show the following options. Please **DO NOT** change the date or time when the recording function is activated. See "**2.1 GETTING STARTED**" for details.

DATE	
DATE	2006-MAY-12 16:30:00
FORMAT	Y-M-D
DAYLIGHT SAVING	ON

1) DATE:
Set the correct time of the DVR (YEAR / MONTH / DAY / HOUR / MIN / SEC)

2) FORMAT:
There are three formats: Y-M-D, M-D-Y, D-M-Y.

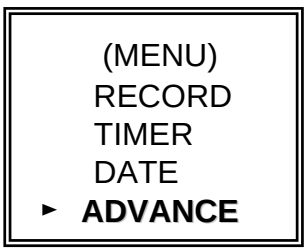
3) DAYLIGHT SAVING:
Specify whether to use daylight saving time and time period. (START / END)
Daylight saving time can be adjusted manually.
Enter the daylight saving menu mode to set the start time and the end time, and adjust hours of the daylight saving.

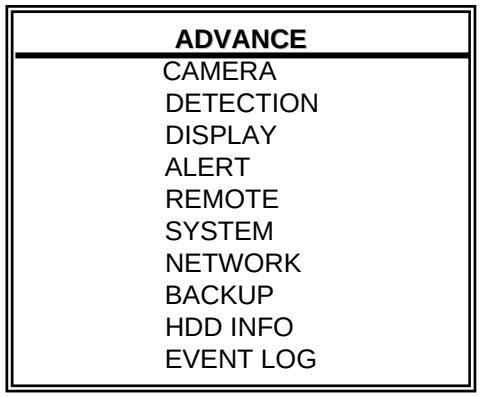
DAYLIGHT SAVING	
START	4TH-SUN-MAR 01: 00: 00
END	4TH-SUN-OCT 01: 00: 00
ADJUST	01 : 00

NOTE: The illustrated setting means: During the daylight saving time period (start from the 4th Sunday of March, end on the 4th Sunday of October), the DVR system time will plus one hour.

4.5 MAIN MENU OPTIONS___ADVANCE

Move the cursor to “ADVANCE” and press ”ENTER”. The screen will show the following options.





4.6 ADVANCED MENU ___CAMERA

Move the cursor to “CAMERA” and press ”ENTER”. The screen will show the following options.

CAMERA

TITLE	BRIG	CONT	SATU	HUE	COV	REC
01	110	128	128	128	NO	YES
02	110	128	128	128	NO	YES
03	110	128	128	128	NO	YES
04	110	128	128	128	NO	YES

1) TITLE:
Move the cursor to the camera title you want to change, and press “ENTER” to access the setting screen. Assign each channel a title (up to six characters (letters or symbols…)). The default title is the channel number.

2) BRIG / CONT / SATU / HUE:
Adjust the Brightness/Contrast/Saturation/Hue of each channel.
The level is from 0 to 255. The default value of BRIG is 110. Others are 128.

3) COV (COVERT):
Select “YES” to mask the selected channel which is under recording.
When this function is activated, the “COV” word will be shown on the screen.

4) REC (RECORD):
Select “YES” to enable the record function. Select “NO” to disable recording at all time.

4.7 ADVANCED MENU ___DETECTION

Move the cursor to “DETECTION” and press ”ENTER”. The screen will show the following options.

DETECTION
DETECTION SETUP
DETECTION TIMER

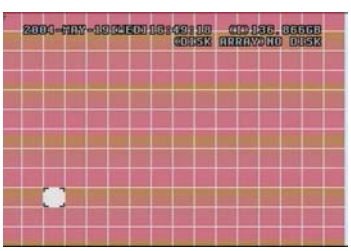
1) DETECTION SETUP:

DETECTION							
TITLE	DET	AREA	LS	SS	TS	RE	ALARM
01	ON	SETUP	07	03	02	10	OFF
02	ON	SETUP	07	03	02	10	LOW
03	ON	SETUP	07	03	02	10	HIGH
04	ON	SETUP	07	03	02	10	OFF

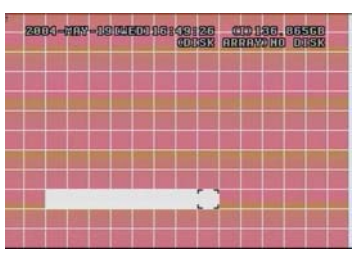
a) TITLE:
Show the camera title of each channel.

b) DET:
Select “ON” to activate the motion detection function of the selected channel.
Select “OFF” to inactivate the motion detect function of the selected channel.

c) AREA:
Press the “ENTER” button to set the detection area.
Pink blocks represent the area that is not being detected while the transparent blocks are the areas under detection.

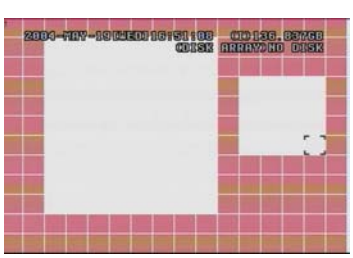


Press “ENTER” to confirm the start area



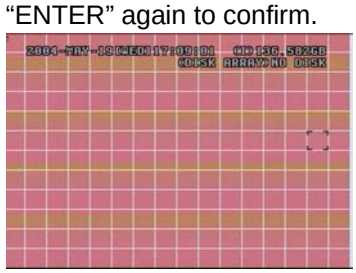
Press ◄ or ► to choose the width of the area

Press ▲ or ▼ to choose the height of the area, and press “ENTER” again to confirm.



Multi-detection areas

Press “ - ” to set the whole area under detection



Press “ + ” to set the whole undetected

▲▼◄►: Navigate between targets.

d) LS :
The sensitivity of comparing two different images. The smaller the value is, the higher sensitivity for motion detection.
The highest sensitivity setting is 00 and the lowest sensitivity setting is 15.
The default value is 07.

e) SS :
The sensitivity regarding the size of the triggered object on the screen (the number of motion detection grids). The smaller the value, the higher sensitivity for motion detection.
The highest sensitivity setting is 00 and the lowest sensitivity setting is 15.
The default setting is 03.

Note: The default setting of Spatial Sensitivity is 03, which means once a object is detected more than 3 grids, the system will get triggered. So the value of Spatial Sensitivity must be less than the number of grids that you set up for the motion detection area.

f) TS :
The sensitivity regarding how long the object gets triggered. The smaller the value, the higher motion detection sensitivity will be.
The highest sensitivity setting is 00 and the lowest sensitivity setting is 15.
The default setting is 02.

g) RE :
The value of RE is a reference for detection. The default value is 10, which means DVR will compare 10 continuous images at one time according to the sensitivity of LS, SS, TS simultaneously. The bigger the value, the higher sensitivity for motion detection. The highest sensitivity is 61.

h) ALARM:
Select LOW / HIGH for the alarm polarity. The default alarm value is OFF.

2) DETECTION TIMER:
Set the date, start time and end time for the detection function.

DETECTION TIMER

DATE	START		END
OFF	00 : 00	-	00 : 00
DAILY	08 : 00	-	18 : 00
SUN	06 : 00	-	23 : 00
MON-FRI	00 : 00	-	00 : 00
OFF	00 : 00	-	00 : 00
OFF	00 : 00	-	00 : 00
OFF	00 : 00	-	00 : 00

4.8 ADVANCED MENU ___DISPLAY

Move the cursor to “DISPLAY” and press ”ENTER”. The screen will show the following options.

DISPLAY	
TITLE DISPLAY	ON
DATE DISPLAY	ON
HDD INFO	ON
LOSS SCREEN	BLUE
PLAYBACK INFO	NORMAL
DWELL DURATION (SEC)	2
DE-INTERLACE	ON
MONITOR OUT	MAIN
OSD	SETUP
WATERMARK	ON

1) TITLE DISPLAY:
Turn the channel title display on / off.

2) DATE DISPLAY:
Turn the date display on / off.

3) HDD INFO:
Turn the information display of internal HDD on / off.

4) LOSS SCREEN:
Set the color of the video loss screen (Blue or Black)

5) PLAYBACK INFO:
Set the position where playback information will be indicated
(center or normal (on the button of the left-hand side of the screen)).

6) DWELL DURATION (SEC):
Set the duration time of each channel for CALL MONITOR (2, 4, 8, 16 secs.)

7) DE-INTERLACE:
Set the “DE-INTERLACE” function on / off.

8) MONITOR OUT:
Select "MAIN" when the video output device is CRT monitor.
Select "VGA" when the video output device is LCD monitor.
Note: If the connected video output device is LCD monitor, but the setting here is "MAIN", motion detection area setting will be disabled.

9) OSD:
Set the customized OSD color.

10) WATERMARK:
In the playback mode of the software AP, users could proof the authenticity of the **BACKUP VIDEO**. If the **BACKUP VIDEO** had been modified, the video image will turn to light red and the playback will be paused.
Please refer to P. 36 for detailed instructions.
Note: This function is always on and non-switchable.

4.9 ADVANCED MENU __ALERT

Move the cursor to “ALERT” and press ”ENTER”. The screen will show the following options.

ALERT	
EXT. ALERT	ON
INT. BUZZER	ON
KEY BUZZER	ON
VLOSS BUZZER	ON
MOTION BUZZER	ON
ALARM BUZZER	ON
HDD BUZZER	ON
HDD NEARLY FULL (GB)	05
ALARM DURATION (SEC)	05
PRE-ALARM	OFF

1) EXT. ALERT:
Set the sound on / off when the external alarm is triggered.

2) INT. BUZZER:
Set the sound of KEY / VLOSS / MOTION / ALARM / HDD FULL on or off.

3) KEY BUZZER:
Set the sound on / off when pressing the button.

4) VLOSS BUZZER:
Set the sound on / off when any video loss happened.

5) MOTION BUZZER:
Set the sound on / off when the motion alarm is triggered.

6) ALARM BUZZER:
Set the sound on / off when the internal alarm is triggered.

7) HDD BUZZER:
Set the sound on / off when the HDD is full.

8) HDD NEARLYFULL (GB):
If HDD buzzer is on, you could choose to have a buzzer notification when the HDD available capacity is only xxx GB left.

9) ALARM DURATION (SEC):
Press “ENTER” or “ + ” or “ - ” button to set the duration time of alarm recording (5, 10, 20, 40 secs.).

10) PRE-ALARM:
Set the pre-alarm function on (8MB)/ off.
When pre-alarm and event record functions are both activated, the DVR will record a 8MB file before any alarm / motion is triggered.

4.10 ADVANCED MENU __REMOTE

Move the cursor to “REMOTE” and press ”ENTER”. The screen will show the following options.

REMOTE

TITLE	DEVICE	ID	PROTOCOL	RATE
01	PTZ	001	P - D	02400
02	CAMERA	002	NORMAL	02400
03	CAMERA	003	NORMAL	02400
04	CAMERA	004	NORMAL	02400

1) TITLE:
Title of each camera.

2) DEVICE:
Select to control a normal camera or a PTZ camera for each channel.

3) ID:
Set the ID number (0 ~ 255) of PTZ camera.
Note: After connecting to a PTZ camera correctly, the **default ID** of PTZ camera will be shown on the screen.

4) PROTOCOL:
Select NORMAL (our protocol) or PELCO-D protocol.

5) RATE:
Set the baud rate of each channel (2400, 4800, 9600, 19200, 57600). For the connected cameras, such as PTZ and speed dome cameras, etc., please make sure the baud rate setting is the same as the setting here.

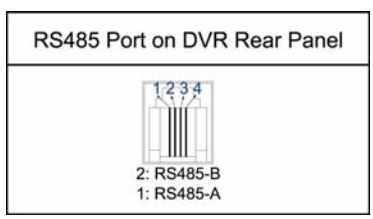
PTZ Camera Connection:

1) Connect the PTZ camera with indicated power supply.

2) Connect the PTZ camera video output to the DVR video input port with a coaxial cable and BNC connector.

3) Connect “RS485-A” line (brown color) to RS485-A port on the rear panel of the DVR. Connect “RS485-B” line (orange color) to RS485-B port on the rear panel of the DVR.

Note: For detailed camera ID, protocol and baud rate setup at DVR side, please refer to the description above. For detailed camera ID, protocol and baud rate setup at remote AP software side, please refer to “Device” at page 39 (AP software system configuration). For detailed PTZ control instructions, please refer to “Digital Device Control Panel ~ PTZ” at page 35.



4.11 ADVANCED MENU ___SYSTEM

Move the cursor to “SYSTEM” and press ”ENTER”. The screen will show the following options.

SYSTEM	
SERIAL TYPE	RS - 485
BAUD RATE	02400
HOST ID	003
PASSWORD	SETUP
RESET DEFAULT	RESET
CLEAR HDD	MASTER
UPGRADE	NO →
AUTO KEYLOCK	NEVER
LANGUAGE	ENGLISH
VERSION	1088-10-K2-04-AA-11
VIDEO FORMAT	NTSC

1) SERIAL TYPE:
Press “ENTER” or “ + ” or “ - ” button to set the control serial type (RS-485, RS-232) of DVR.

2) BAUD RATE:
Press “ENTER” or “ + ” or “ - ” button to set the BAUD RATE of DVR (2400, 9600, 19200, 57600).

3) HOST ID:
Press “ENTER” or “ + ” or “ - ” button to set the ID of DVR (0 ~ 255).

4) PASSWORD:
Press “ENTER” to set the password for accessing DVR (admin password or guest password). Users who use guest password to access the DVR will only allow to view the live streaming video and sequence display, shift the channel display, and lock keys.

5) RESET DEFAULT:
Press “ENTER” to reset all settings as default, and select “YES” to confirm or “NO” to cancel.

6) CLEAR HDD:
Press “ENTER”, and select “YES” to confirm to clear HDD or “NO” to cancel.

7) UPGRADE (**This function is only for Model 1, 2, 4 and 5)**:
Press “ENTER”, and select “YES” to confirm upgrade or “NO” to cancel.

8) AUTO KEYLOCK:
Set the time-out after which the key lock function is activated.
(Never / 10 secs / 30 secs / 60 secs)

9) LANGUAGE **(Support multi-language)**:
Press “ENTER”, “ + ” or “ - ” to select the language for the OSD.

10) VERSION:
The firmware version information.

11) VIDEO FORMAT:
The information of the DVR’s video format.

4.12 ADVANCE MENU ___NETWORK

Move the cursor to “NETWORK” and press ”ENTER”. The screen will show the following options.

NETWORK	
NETWORK TYPE	STATIC
DNS	61. 66. 138. 53
PORT	0 0 8 0

1) NETWORK TYPE (STATIC):

Select NETWORK TYPE, press “ **+** ” or “ - ” button to set the network type as STATIC, and then press “ENTER” to go to the submenu of the network. In the submenu of network type, use “ **+** ” or “ - ” button to set all the information needed in the DVR. See the illustration below.

STATIC	
IP	60. 121. 46. 236
GATEWAY	60. 121. 46. 226
NETMASK	255. 255. 255. 254

2) NETWORK TYPE (DHCP):

The DHCP function needs to be supported by a router or a cable modem network with DHCP services. For detailed DHCP settings, please refer to the AP (Licensed Software AP) setup at P37 and P38.

3) NETWORK TYPE (PPPOE):

This PPPOE function needs to have one “username” and one “password” subscribed from one ISP supplier.
For detailed PPPOE settings, please refer to the AP (Licensed Software AP) setup at P37 and P38.

NOTE:

DHCP and PPPOE network types need to apply DDNS services to get “Hostname” to correspond to the dynamic IP address. For detailed DDNS settings, please refer to P.38.

4.13 ADVANCE MENU ___ BACKUP

Move the cursor to “BACKUP” and press ”ENTER”. The screen will show the following options.

BACKUP
USB BACKUP

Select “USB BACKUP” and then press “Enter”.

USB BACKUP	
START TIME	2006-MAY-12 16 : 30 : 00
END TIME	2006-MAY-12 16 : 40 : 00
AVAILABLE SIZE	0512 MB
CHANNEL	• 01 X 02 X 03 X 04
HDD NUM	HDD-MASTER-1
BACKUP TO USB	START

1) START TIME:
Select the start time of the backup.

2) END TIME:
Select the end time of the backup.

3) AVAILABLE SIZE:
Display the available capacity in the inserted USB flash drive.

4) CHANNEL:
Select channels by pressing “ENTER” button to change the symbol in front of the channel number.
Symbol “X” means that this channel is not selected to backup.
Symbol “●” means that this channel is selected to backup.

5) HDD NUM:
Show the HDD from which you want to backup data.

6) BACKUP TO USB:
Press “ENTER” to start copying the chosen file to the USB flash drive.

7) Audio Backup:
For audio 1 backup, please choose CH1.

NOTE:

① Please use PC to format the USB flash drive as "FAT 32".

② If the USB flash drive is not supported by the DVR, the “USB ERROR” message will be shown on the screen.

③ We recommend to clear all the files in the USB flash drive before you backup files in your USB flash drive.

④ The backup file can be played directly in your PC via the supplied licensed AP, or via other media players (Ex: Windows Media Player or RealPlayer) after the file is converted to “AVI” format. For detailed AP playback, please refer to P.36.

4.14 ADVANCED MENU ___HDD INFO

You can get the capacity information for the connected HDD.

HDD INFO			
HDD NUM	HDD SIZE	HDD NUM	HDD SIZE
MASTER-1	400.000	SLAVE-1	NO HDD
MASTER-2	NO HDD	SLAVE-2	NO HDD
EXT001	NO HDD	EXT 002	NO HDD
EXT003	NO HDD	EXT 004	NO HDD
EXT005	NO HDD	EXT 006	NO HDD
EXT007	NO HDD	EXT 008	NO HDD
EXT009	NO HDD	EXT 010	NO HDD
EXT011	NO HDD	EXT 012	NO HDD

4.15 ADVANCED MENU ___EVENT LOG

You can get all the information (event type, time, and channel) on the event list, including video loss list, net list and other lists (such as power on / off, key unlock, reset to default). Select the event list you want to see and press “ENTER”.

EVENT LOG	
VLOSS	LIST
NET	LIST
SYSTEM	LOG
OTHERS	
CLEAR	ALL

1) VLOSS LIST:
Show the information of the video loss time.

2) NET LIST:
Show the information of the net login time.

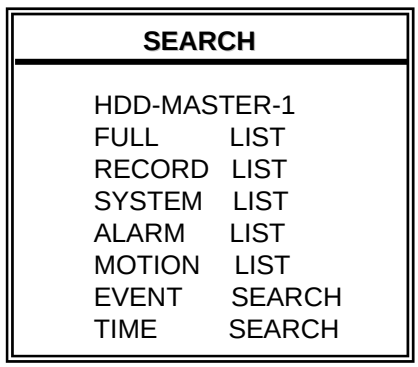
3) SYSTEM LOG:
Show the error code for system errors.
For the meaning of each error code, please see “6.1 FAQ”.

4) OTHERS:
Show the information of “power on / off”, “unlock” and “reset to default” time.

5) CLEAR ALL:
Clear all event log lists.

5.1 SEARCH

Press "**SEARCH**" button on the front panel of the DVR to enter the search mode. Then the screen will show the following options.



1) HDD:
HDD-Master-1.

2) FULL LIST:
Show the time list for all types of the recorded files. The capital letters stand for the following: R: RECORD / S: SYSTEM / A: ALARM / MS: MOTION / T: TIMER.

3) RECORD LIST:
List the time of manual recorded files.

4) SYSTEM LIST:
List the time of system recorded files.
Under the manual recording mode, the DVR system will save one recorded file every one hour.

5) ALARM LIST:
List the time of alarm trigger recorded files.

6) MOTION LIST:
List the time of motion trigger recorded files.

7) EVENT SEARCH:
Search the recorded files by the specific time period (YEAR / MONTH / DAY / HOUR / MIN), channel, HDD, and event type (motion / alarm triggered recording). When you playback the recorded videos, they will be played with the fast speed.

8) TIME SEARCH:
Search the recorded files by the specific time period (YEAR / MONTH / DAY / HOUR / MIN).

NOTE:
Move the cursor to the specific recorded file and press "ENTER" to play the video. Press stop " ■ " button to return to the live display.

5.2 KEY LOCK

1) Key Lock On:

   ① Press “MENU” + “ENTER” buttons on the DVR front panel to lock keys.
   ② Auto key lock: refer to the section “4.11 ADVANCE MENU_SYSTEM”.

2) Key Lock Off:
   Enter the password to exit Key Lock mode.

3) Password:
   For the password setting, please refer to “4) PASSWORD” in the section “4.11 ADVANCE MENU_SYSTEM” at P.24.

5.3 SWITCH N/P SYSTEM

1) Press “ ⏻ “ **or** “**Power**” button on the DVR front panel to shutdown. Then, press and hold “►“ first, and press “ ⏻“ **or** “**Power**” to switch to PAL system.
   (Press the buttons until the monitor shows video images.)

2) Press “ ⏻ “ **or** “**Power**” button on the DVR front panel to shutdown . Then, press and hold “◄“ first, and press “ ⏻“ **or** “**Power**” to switch to NTSC system.
   (Press the buttons until the monitor shows video images.)

Note: The system will automatically detect PAL/NTSC system.

5.4 R.E.T.R.

R.E.T.R. functionality is not available in this model.

5.5 USB UPGRADE

Users can use USB to upgrade.

Please format the USB memory device as FAT 32 format first.

1) Get the upgrade files from your distributor.
2) Save the upgrade files in your USB device (Do not change the file name).
3) Go to “MAIN MENU – SYSTEM - UPGRADE” , and press “ENTER”.
4) Select “YES”, and press “ENTER” again to confirm upgrade.

1 **WARNING** UPGRADE ARE YOU SURE? YES NO	2 **WARNING** PLEASE WAIT… UPGRADE KERNEL OK	3 **WARNING** PLEASE WAIT… UPGRADE BOOT OK
4 **WARNING** PLEASE WAIT… UPGRADE HTML OK	5 **WARNING** UPGRADE SUCCESS REBOOT OK	6 **WARNING** SHUTDOWN PLEASE WAIT… OK

NOTE:

① Please use PC to format the USB flash drive as "FAT 32".

② If the USB flash drive can’t be detected by the DVR, the “USB ERROR” message will be shown on the screen.

5.6 LICENSED SOFTWARE AP

1) Install the Software:

① Place the attached CD into one CD-ROM drive and install application programs into PC (Including AP and JAVA program).

② After setup, users will see “

“ icon on the desktop.

NOTE:

For the latest version of the software AP, please refer to your distributor, or refer to “Section 5.6 OPERATION VIA IE BROWSER”.

2) AP Basic Operation:

① Connect your DVR to PC via RJ45 network line.

② LAN Setting :
The default DVR IP is “192.168.1.10”, and default “username” and “password” are both “admin”. Users should set PC’s IP address as “IP:192.168.1.***XXX*** ” (1~255, except 10) in order to make the PC and DVR under the same domain.

③ Double click to enter the login page.
Key in IP (192.168.1.10), your username (admin), password (admin) and port (80) in the login page. After connecting to the DVR with local LAN, users could modify the network settings in the DVR or in “SYSTEM CONFIG” menu of the licensed software AP.

④ Network Type ~ Static IP :
Set the network information in the DVR menu (Section 4.12) or in “SYSTEM CONFIG” menu of the licensed software AP (P.37).

Network Type ~ Dynamic IP (DHCP and PPPOE) :
Set the Network information in “SYSTEM CONFIG” menu of the licensed software AP.
For detailed DHCP and PPPOE settings, please refer to P.37 and P.38.

⑤ After setting up the network information, double click to enter the login page. Key in “Username”, “ Password”, “IP” (Static IP) or “Host name” (Dynamic IP) as well as “Port”. And then click the green button to connect.

⑥ LOGIN AP Icon Explanation

Address Book: Press this button to add a new IP into the IP Address Book or choose any preset IP address to access the software AP.

Search: Search available DVR IP addresses in the local area network and modify the network setting of the DVR.

Player: Press this button to access and play the recorded files that are saved in your PC.

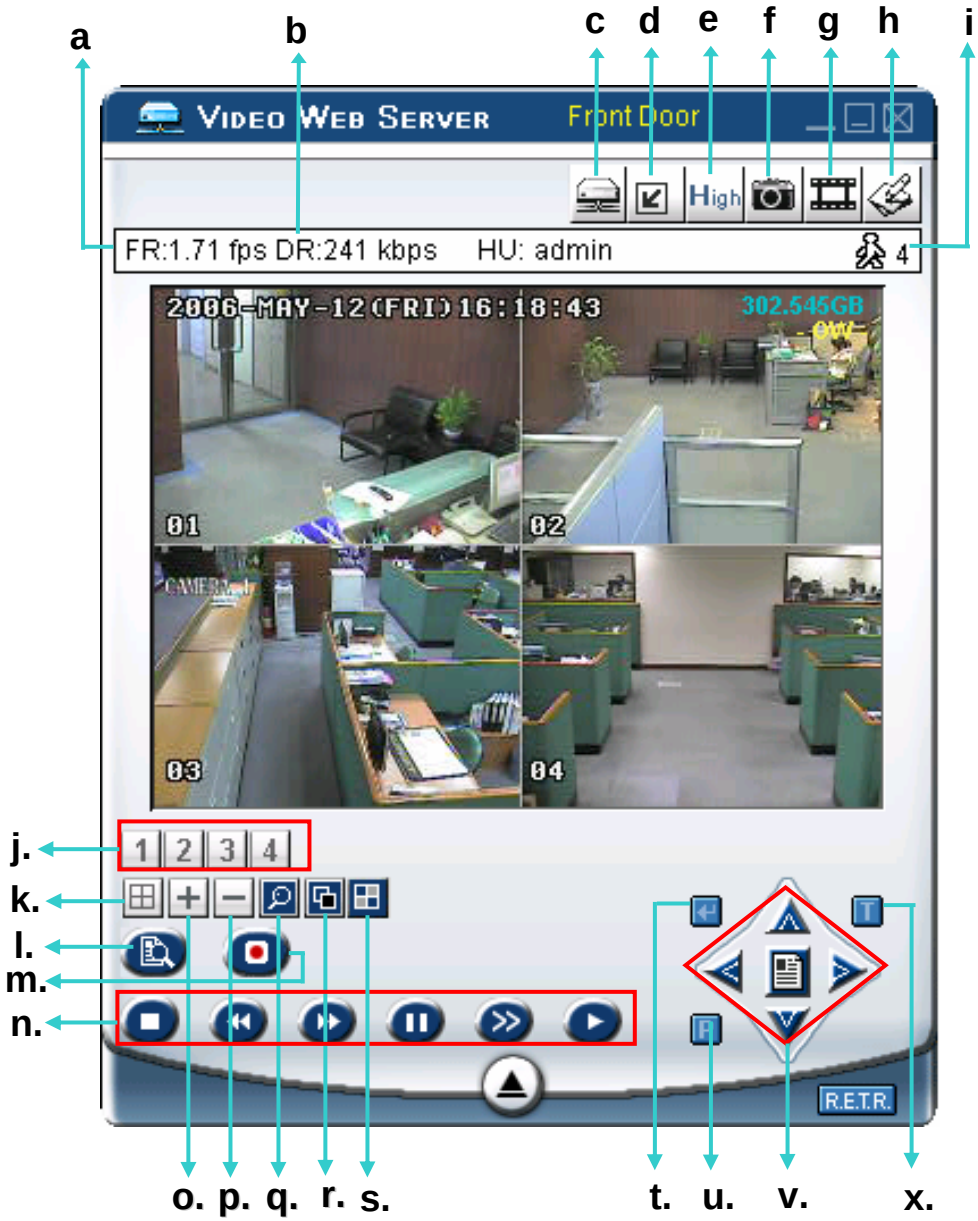
Copy: Press this button to copy all the software installation files so users could keep all the settings of the video web server for next software installation on other PCs.

Upgrade Firmware: Press this button to upgrade DVR firmware or OSD language files. The provided firmware and OSD files should be saved at PC first.

NOTE: The version of the licensed software will be shown on the login page.

⑦ AP Control Panel

Digital Device Control Panel ~ 4 CH DVR



a. Image Transfer Rate Per Second

b. Data Transfer Rate

c. Connect / Disconnect

d. Resolution:
NTSC: 320 × 228 ; 640 × 456
PAL: 320 × 276 ; 640 × 552

e. Image Quality (High, Medium, Low)

f. Snapshot: Press this button to take a snapshot of the image that will be saved in the designated destination you set in “SYSTEM CONFIG - File Path - Snapshot Path”.

g. Record: press this button to start recording, and press this button again to stop recording. The recorded files will be saved to the designated path on the PC. Each recorded file can be up to 18,000 frames. When the recorded file is full, the new recorded file will be saved as the second file.
If the HDD space is less than 200MB, the program will stop recording.

h. System Config: press this button to enter the setting page of the software AP.

i. Number of Online Users

j. CH 1 ~ 4

k. 4 Channel Display

l. Record

m. Search

n. Stop / Fast Rewind / Fast Forward / Pause / Slow Playback / Play

o. + : for changing system settings and switching channels

p. - : for changing system settings and switching channels

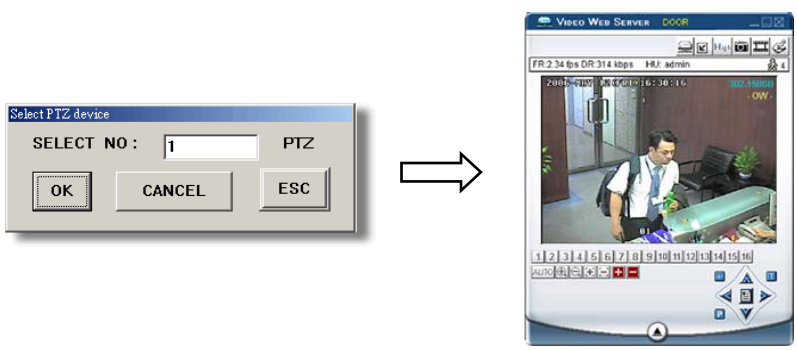
q. Digital Zoom: digital zoom in/out

r. Set: Press this button to change the position of the channel display.
Press "▲▼◄►" to select the channel that you would like to change.
Press " + " or " - " to select the channel that you would like to show.
Press "Enter" button to confirm the setting.

s. Sequence: Press this button to enter the call monitor function and press again to exit from the call monitor mode. When any motion is detected, the monitor will switch to the channel which is motion-triggered.

t. Enter: for confirming the system settings or entering your selection.

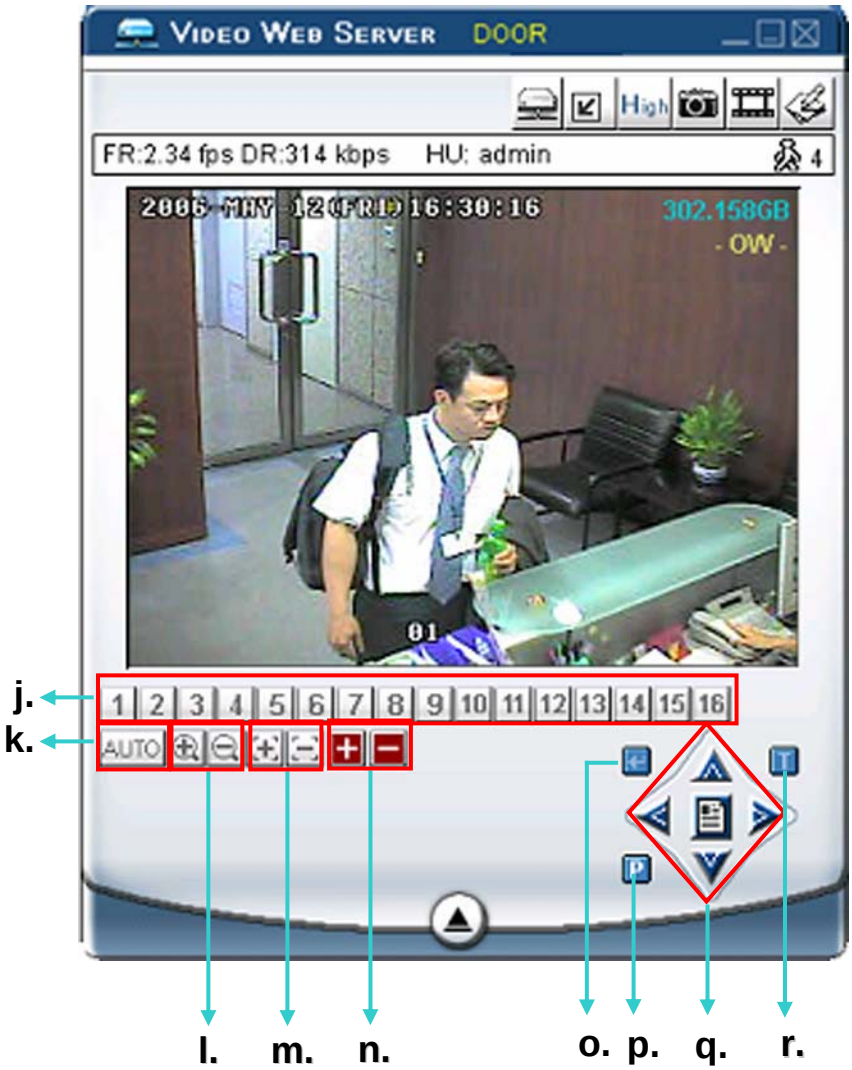
u. PTZ Control On / Off:
When the PTZ control is turned on, users could select the PTZ device, and press "OK" button to enter the PTZ control AP screen. (Press "ESC" to exit from the PTZ control AP screen and return to the DVR control AP screen)



v. Menu / Up / Down / Left / Right

w. Turbo ON/ OFF:
To speed up menu selection or the control of the PTZ camera under software AP, users could activate "Turbo" function by clicking this button. Users are allowed to change the turbo steps from 1 to 30.
Ex: If users activate the TURBO function and set the value of the turbo step as 3, then when users press one of the button up/down/left/right, one mouse click will function as clicking 3 times.

Digital Device Control Panel ~ PTZ



j. Preset 1 ~ 16

k. AUTO

l. Zoom Tele Zoom Wide

m. Focus Near Focus Far

n. Max Zoom In Max Zoom Out

o. Enter

p. PTZ Control On / Off:
When the PTZ control mode is turned on, users could select the PTZ device and press “OK” button to enter the PTZ control AP screen. (Press “ESC” to exit from the PTZ control AP screen and return to the DVR control AP screen)

q. Menu / Up / Down / Left / Right

r. Turbo:
To speed up menu selection or the control of the PTZ camera under the software AP, users could activate "Turbo" function by clicking this button. Users are allowed to change the turbo steps from 1 to 30.
Ex: If users activate the TURBO function and set the value of the turbo step as 3, then when users press one of the button up/down/left/right, one mouse click will function as clicking 3 times.

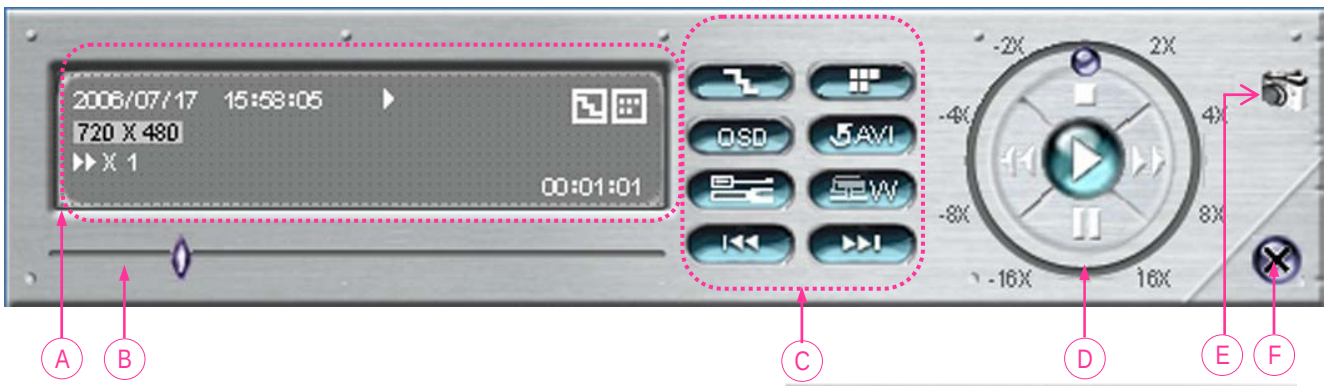
⑧ Playback Operation

AP Playback Window :

AP Config. Setting Box :

One click to activate

- De-interlace
- De-blocking
- OSD
- AVI Convert
- Config. Setting
- Watermark
- Open Previous File
- Open Next File



A. **Playback Information** :
Display information such as “Date”, “Time”, “Resolution”, “ Rewind / Forward Speed”, “Status” and “Functions”, etc.

B. **Time Progress Bar** :
Show the playback progress status.

C. **Functions** :

To snap a video clip, right click the mouse to make a starting point (red) and click one more time to make a ending point. Then right click to convert to the AVI format.

- **De-interlace**: Reduce the vibration of the paused picture.
- **De-blocking**: Reduce the video mosaic phenomenon.
- **OSD**: Display the OSD of the AP playback window.
- **AVI conversion**: Convert the entire recorded file to the AVI format.
- **Config. Setting**: Enter the AP config. setting box, and set the file path, text color and text color of progress status.
  * Mute: Play back the video only (without audio).
  * AV Sync.: Play back with the audio and video synchronously.
- **Watermark**: Proof the authenticity of the backup video.
- **Open Previous File**: Open the previous backup video.
- **Open Next File**: Open the next backup video.

D. **Playback Control Buttons** :
Play / Stop / Pause / Fast Rewind / Fast Forward

E. **Snapshot** :
Press this button to take a snapshot of the current image which will be saved in the designated destination.

F. **Close the Player**

Note:

- When users pause the playback picture, press “ ” button to go to the previous frame, or press “ ” button to go to the next frame.
- In the playback mode of the software AP, users could press ” “ button to check the authenticity of the **BACKUP VIDEO**. If the **BACKUP VIDEO** had been altered, the video image will turn to light red and the playback will be paused.

Note:

- When users use remote AP recording, the watermark function is not supported.

3) AP Advanced Setting:

❑ Press “System Config“ button to enter the system setting page.

Network

The network configuration allows the DVR to connect to an Ethernet or dial-up network.

① **Static IP:**
Enter the “server IP”, “gateway”, “net mask” and “web port”, and then press “APPLY” to confirm.

② **PPPOE:**
Enter the “username” and “password” provided by your ISP (Internet Service Provider). Then, go to “DDNS” and finish DDNS settings (see P.38) before pressing “APPLY”.

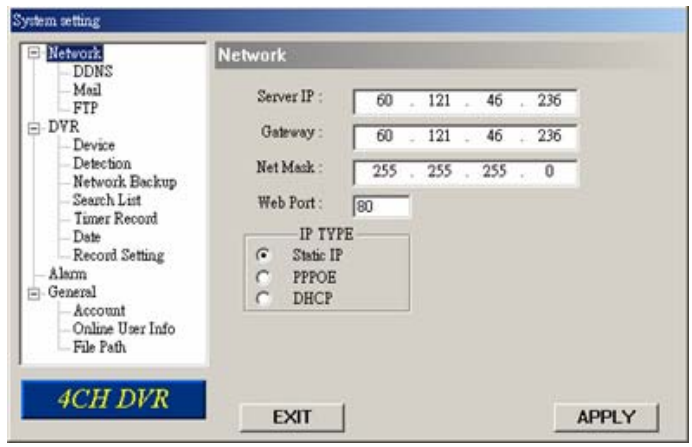
③ **DHCP:**
This DHCP function needs to be supported by a router or a cable modem network with DHCP services. Choose the DHCP IP type. Then, go to “DDNS” and finish DDNS settings (see P.38) before pressing “APPLY”.

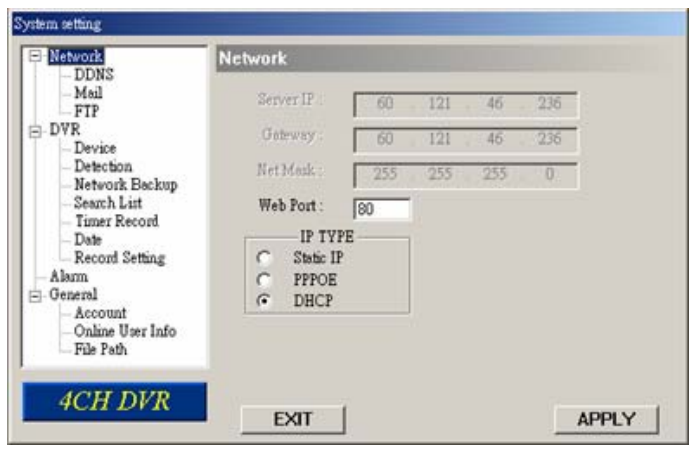
Note:

a) PPPOE and DHCP network connection types are required to apply DDNS services **FIRST** to get a “Hostname” to correspond to the dynamic IP address. Please refer to P.38 for details.

b) Some router brands may need to restart the DVR to get the IP address.

④ **Web Port:**
The DVR can be viewed over the network with the software AP or a web browser. Typically, the TCP port used by HTTP is 80. However in some cases, it is better to change this port number for added flexibility or security. The valid number ranges from 1 to 9999.



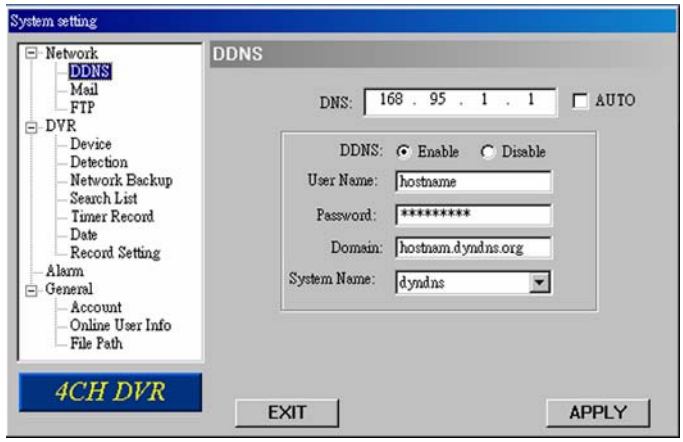


DDNS

① DDNS is a service for transforming the dynamic IP corresponding to a specific “Hostname”.

② **DDNS Apply:**
Go to a website which provides free DDNS services and apply a “Hostname”. See the example below.

③ **Enable the DDNS function**:
User Name: Enter your DDNS user name.
Password: Enter your DDNS password.
Domain: Enter your host name.
System Name: Choose the LOREX system from list.
After setting, press “APPLY” to confirm.

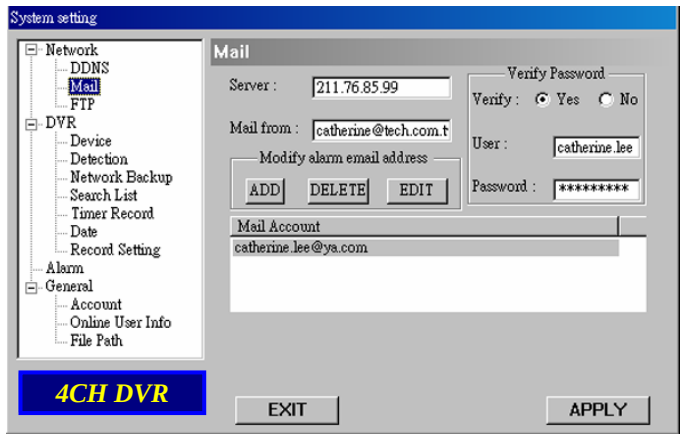


Note: If the dial-up static IP is provided by your ISP, simply choose “Enable” and do not need to enter the information described above.

④ **Auto:**
When using DHCP network connection, the "AUTO" check box will appear on this window. The system will automatically get DNS information from the Internet if this check box is selected.

See the “DDNS SETUP’ insert for DDNS configuration details.

Mail



① When the recording is triggered by an alarm or a motion, a video copy file can be captured. The DVR will send an e-mail notification to the assigned recipients (up to 5 recipients).

*****Note***:**

To activate the e-mail notification function, please enable the function of e-mail notification in the "**Alarm**" setting first (page 46).

② Add the recipients' email accounts in "**Mail Account**" column.

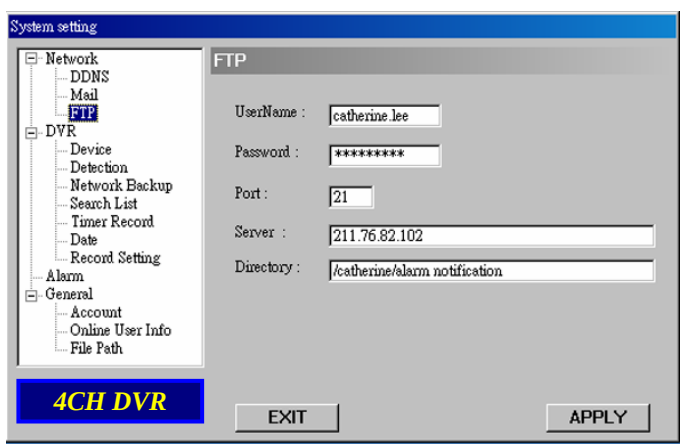
For detailed information (SMTP server, username and password), please get from your e-mail system supplier.

③ Please type the entire email address in the "**Mail from**" column to ensure emails will not be blocked by SMTP.

④ In some cases, mail servers require to verify password. Please enter the "**user name**" and "**password**".

⑤ After finishing the settings, press "APPLY" to confirm.

FTP



① When the recording is triggered by an alarm or a motion, a video copy file can be captured. And the DVR will upload the captured images to the assigned FTP site.

② Enter the detailed FTP information.

*****Note***:**

To activate the FTP notification function, please enable the function of FTP notification in the "**Alarm**" setting first.

① After setting, press "APPLY" to confirm.

DVR – Camera Setting

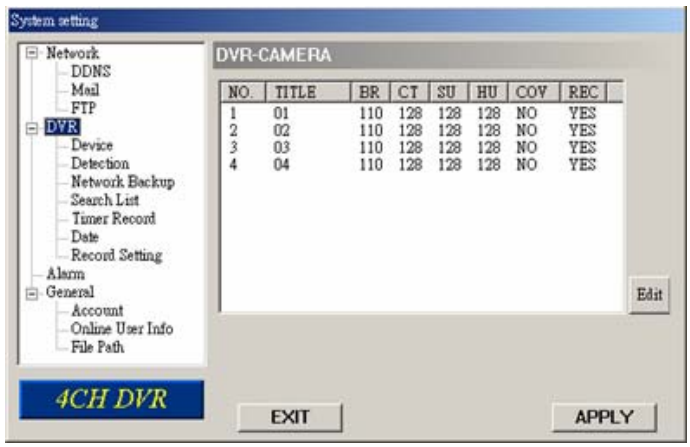
① Each camera channel can be adjusted independently.

② Select the desired camera channel. Press “Edit” to enter the setting box.

③ **Title:**
Enter the camera channel name up to 6 characters.

④ **Adjustment:**
Adjust the BR (brightness) / CT (contrast) / SU (saturation) / HU (hue) / REC (recording) of the camera.

⑤ After setting, press “OK” and then press “APPLY” to confirm.



Device

① Select the desired channel of the installed external device.
Press “Edit” to enter the setting box.

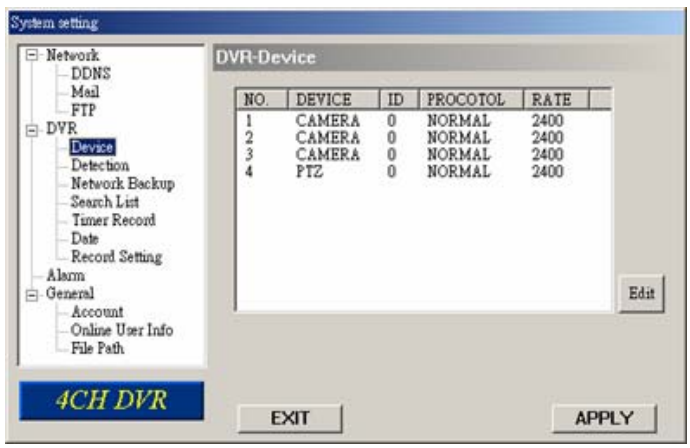
② **Device Type**:
Choose either general camera or PTZ camera.

③ **ID No.** :
Set the ID number (0 ~ 255) of the installed external PTZ device.

④ **Protocol Type** :
Choose “NORMAL” protocol for our own brand camera.
Choose “P-D” protocol for PELCO-D protocol camera.

⑤ **Baud Rate** :
Set the baud rate of each channel (2400, 4800, 9600, 19200, 38400, 57600, 115200).

⑥ After setting, press “OK” and then press “APPLY” to confirm.



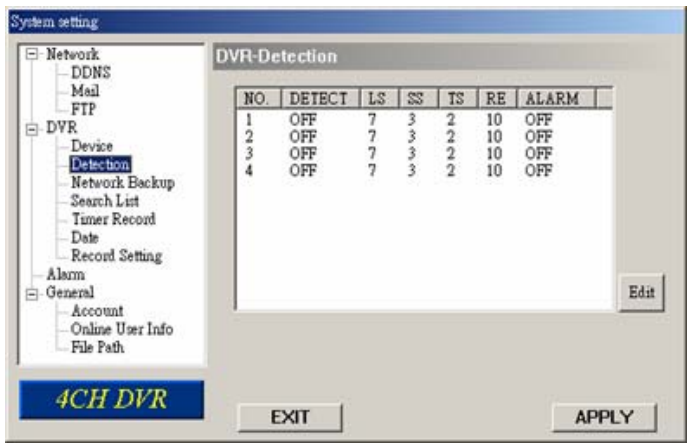
Detection

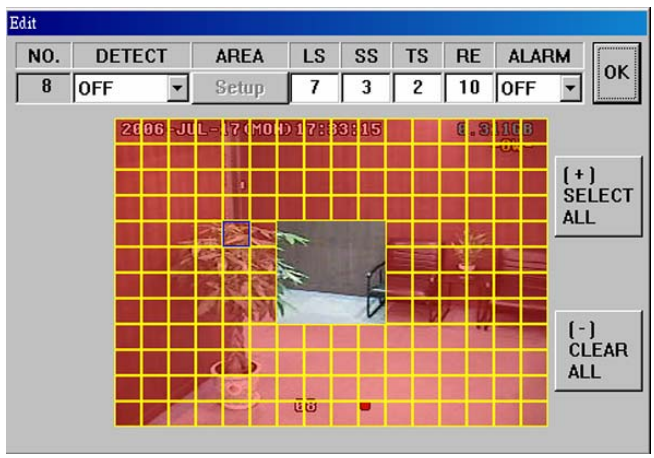
① Select the desired channel, and press “Edit” to enter the motion detection sensitivity and area setting box.

② **Motion Detection Sensitivity**: Set the detection sensitivity in 4 different adjustable factors.
LS: The sensitivity of comparing two different images. The smaller the value, the higher sensitivity for the motion detection.
SS: The sensitivity towards the size of the triggered object on the screen (the number of motion detection grids). The smaller the value, the higher sensitivity for the motion detection.
TS: The sensitivity towards how long the object stays in the detection area to get triggered. The smaller the value, the higher sensitivity for the motion detection.
RE: The value of RE is a reference for the detection. The bigger the value, the higher sensitivity for the motion detection.

③ **Alarm:**
Select LOW / HIGH for the alarm polarity.

④ **Motion Detection Area**:
By clicking the area with your mouse, one can choose the motion area to be detected. The under detected area is transparent while the undetected area is in pink color.
*Click “**Select All**” to activate the detection area as the full area.
*Click “**Clear All**” to clean the previously selected detection area.
After setting, press “OK” and then press “APPLY” to confirm.





Note: Enable the motion detection function. When the motion is triggered, a “ ” icon will be shown on the screen. And the software AP will start recording automatically.

Network Backup

You can backup the recorded data from the DVR directly to your PC and CD-R disk via the network. The backup file can be played directly in your PC via the supplied licensed AP, or via other media players (Ex: Windows Media Player or RealPlayer) after the file is converted to “AVI” format.

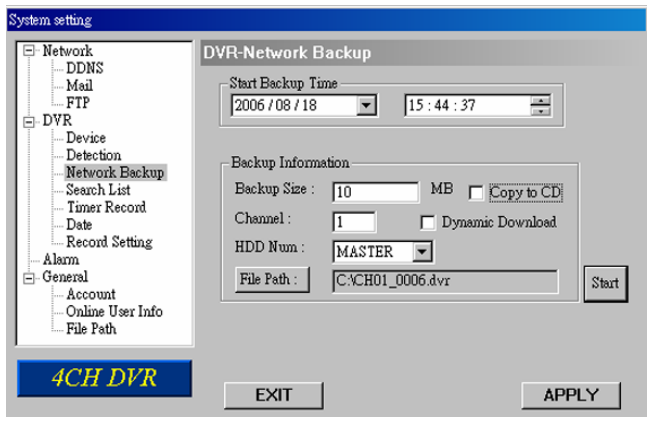
NOTE: For CD backup, please install “NERO” CD burning program to your PC first.

1. Enter the backup information:

If you want to make a backup to a CD, please check “Copy to CD”.

If you want to view the backup image while the backup is processing, please check “Dynamic Download”.

2. Press "Start" button to proceed the backup process.



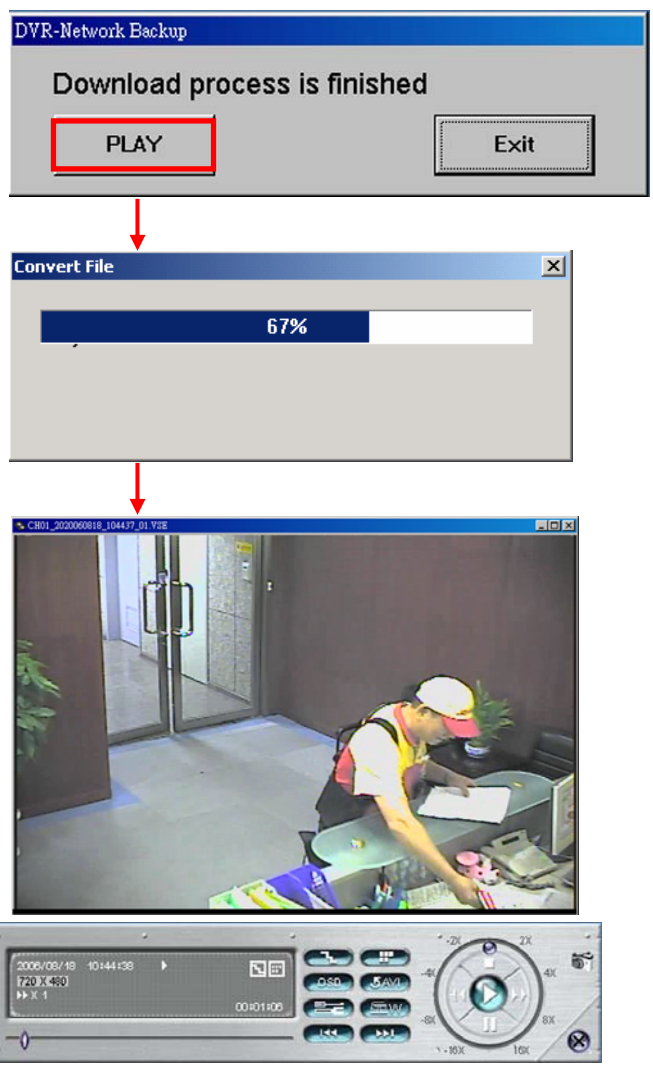
Making backup to your PC:

After pressing “Start”, the backup will be proceeded and a status bar will be displayed. “DVR Network Backup” pop-up window will show the message “Download process is finished” when the backup is succeeded.

Press “PLAY” button to directly convert and play the file, or “Exit” to quit.

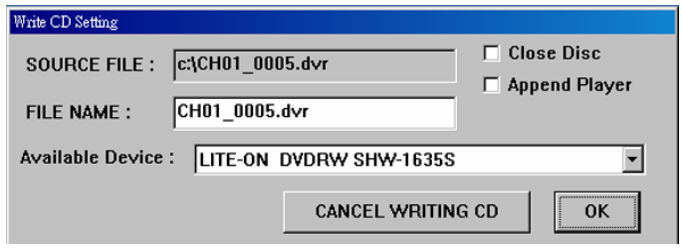
To convert the backup file later, please find the file in the designated file path and double-click it twice for AVI conversion and file playback.

You will see the player and video window as shown on the right side. For AP playback details, please see “Playback Operation” at P.36.



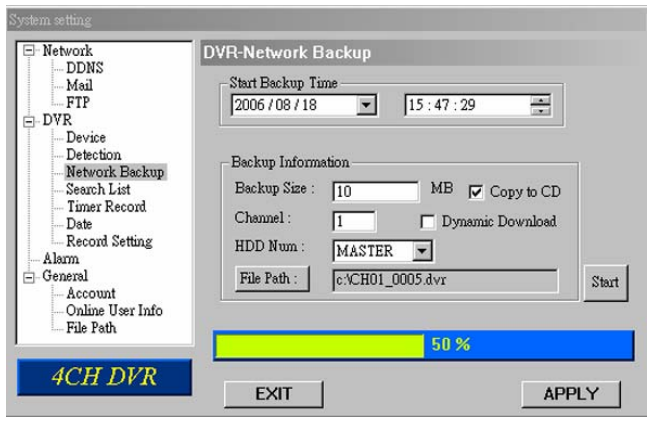
Making backup to a CD:

After pressing “Start”, “Write CD Setting” pop-up window will show.



- Choose “Close Disc” when you don’t want to write any more data to this CD after this burning;
- Choose “Append Player” when you don’t have any available player on your PC to open the backup file.

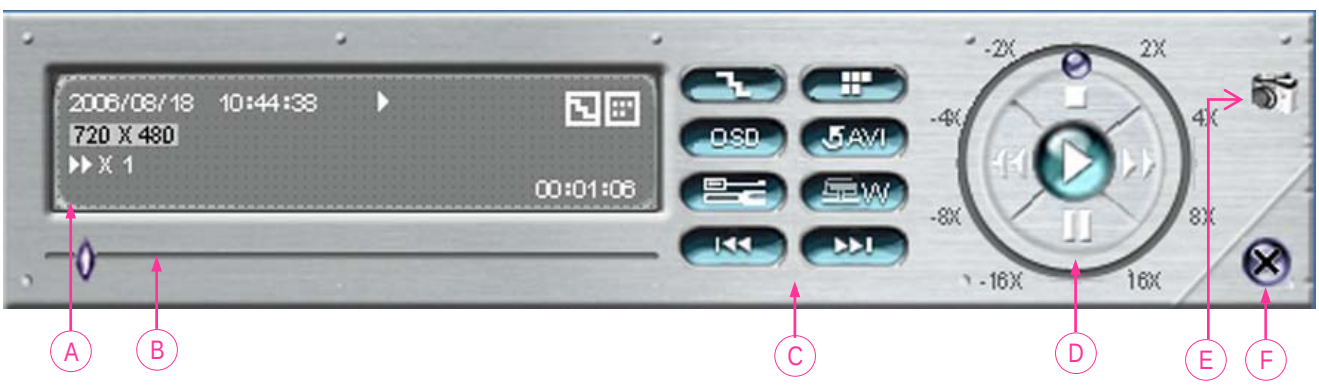
Press “OK” to start making a CD backup, or press “CANCEL WRITING CD” to only make a backup file to your PC.



When CD writing is processing, “DVR-Network Backup” window will show the message “Writing cd …” and a status bar will show the writing status.

When CD writing is completed, the CD will be ejected, and “DVR Network Backup” pop-up window will show the message “Download process is finished”. Press “PLAY” button to directly convert and play the file, or “Exit” to quit.

For AP playback details, please see “Playback Operation” at P.36.



A. **Playback Information**

B. **Time Progress Bar**

C. **Functions** :
(1) De-interlace
(2) De-blocking
(3) OSD
(4) AVI Conversion
(5) Config. Setting
(6) Watermark
(7) Open Previous
(8) Open Next File

D. **Playback Control Buttons** :
Play / Stop / Pause / Fast Rewind / Fast Forward

E. **Snapshot**

F. **Close the Player**.

NOTE:

1. During the file backup process, users can still see the live image at the same time.
2. If the system is under CIF mode, the network backup function will save quad images no matter which channel is selected for backup.
3. The maximum size per file for Network Backup is 500MB.

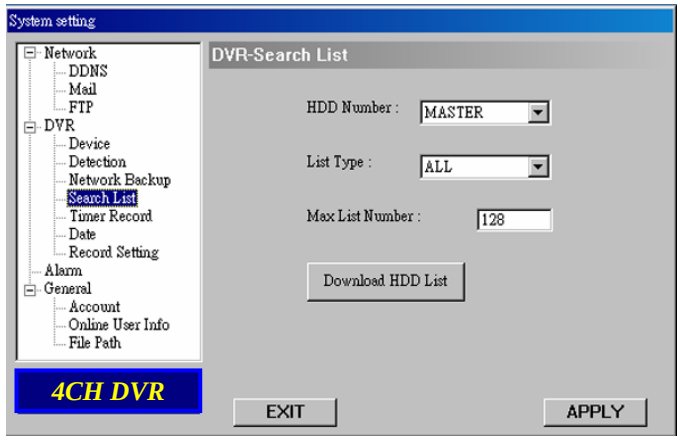
Search List

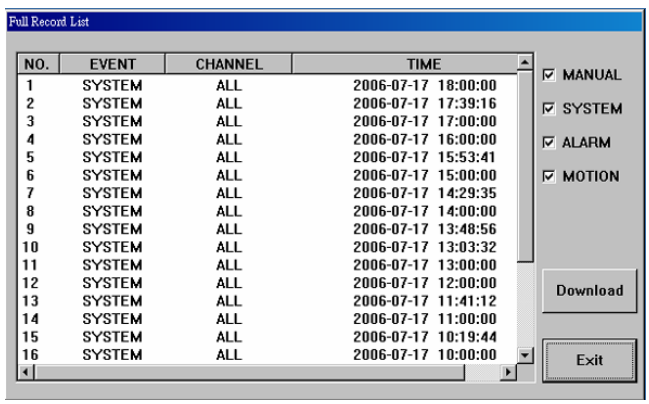
① **HDD Number**:
Select one HDD (Master).

② **List Type**:
Select one list type (All/ Manual/ System/ Alarm/ Motion).

③ **Max List Number**:
Maximum number of the list (128)

④ **Download HDD List**:
Press this button to start downloading the list.





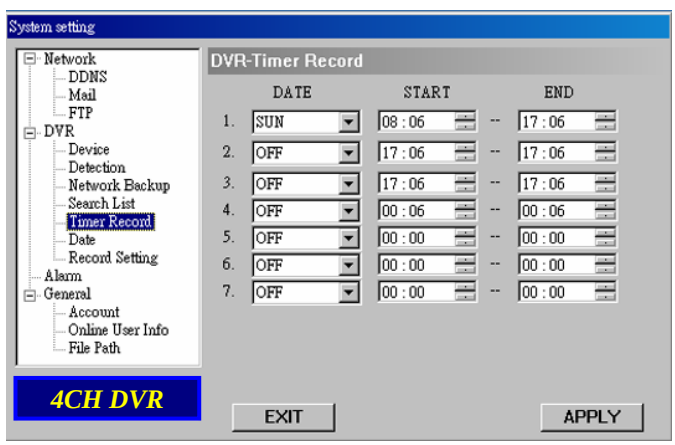
Timer Record

In this menu, you can schedule 7 different sets of time for recording.

① **DATE**:
Choose a day from “DATE” drop-down menu. The options are OFF, SUN, MON,TUE, WED, THU, FRI, SAT, MON-FRI, SAT-SUN and DAILY.

② **START**:
Enter the start time of timer recording.

③ **END**:
Enter the end time of timer recording.



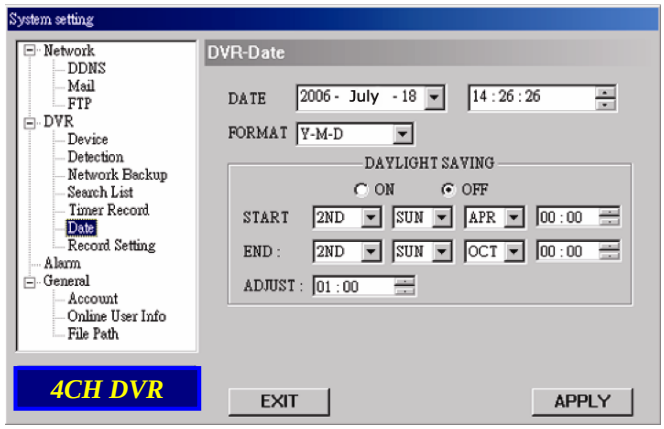
Press “APPLY” if the settings are correct; press “EXIT” to quit without saving.

Date

In this menu, you can set the date for your DVR. Please **DO NOT** change the date or time when the recording function is activated. See "**2.1 GETTING STARTED**" at P.10 for details.

① **DATE**:
Choose the current date from "DATE" drop-down menu and enter the current time.

When you click the drop-down menu, a calendar as shown below shows for you to set the current date.



② **FORMAT**:
Choose the format for date display from the three options: Y-M-D, D-M-Y and M-D-Y.

③ **DAYLIGHT SAVING**:
Specify whether to use daylight saving time (ON / OFF) and time period (START / END), and adjust the daylight saving time in hour (ADJUST).

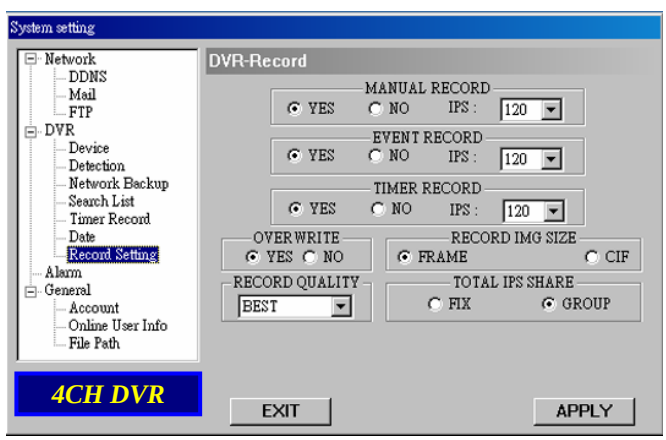
Record Setting

In this menu, you can set DVR record settings.

① **MANUAL RECORD**:
Specify whether to use manual recording (YES / ON) and set IPS number.

② **EVENT RECORD**:
Specify whether to user event recording (YES / ON) and set IPS number.

③ **TIMER RECORD**:
Specify whether to use timer recording (YES / ON) and set IPS number.



④ **OVER WRITE**:
Specify whether to overwrite the HDD capacity when the HDD is full (YES / NO).

⑤ **RECORD IMG SIZE**:
Choose "FRAME" or "CIF". This selection will affect the available IPS options in the 3 recording modes described above.

⑥ **RECORD QUALITY**:
4 options are available from the drop-down menu: BEST, HIGH, NORMAL and BASIC.

⑦ **TOTAL IPS SHARE**:
Choose the IPS share as FIX or GROUP.

NOTE:
The total IPS share is always "FIX". Selecting "GROUP" here is useless.

Alarm

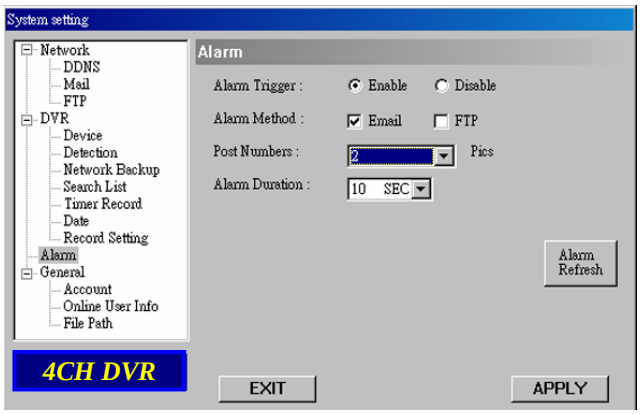
① **Alarm Trigger**:
Enable or disable Email and FTP notification function.

② **Alarm Method**:
Two notification methods
— Email and / or FTP.

③ **Post Numbers**:
Set MJPEG pictures (1-10 pictures).

④ **Alarm Duration**:
Set the duration time of motion trigger recording (5 SEC, 10 SEC, 20 SEC, 40 SEC).

⑤ **Alarm Refresh**:
Clean the alarm message " " which is shown on the screen.



Note:

Email Notification:
MJPEG pictures will be made at your designated space set in "File Path", plus an e-mail contained with the MJPEG pictures (1-10 pictures) to be sent to the address which is set under "Mail".

FTP Notification:
MJPEG pictures will be made at your designated space set in "File Path", plus a FTP file contained with the MJPEG pictures (1-10 pictures) to be sent to the address which is set under "FTP".

General

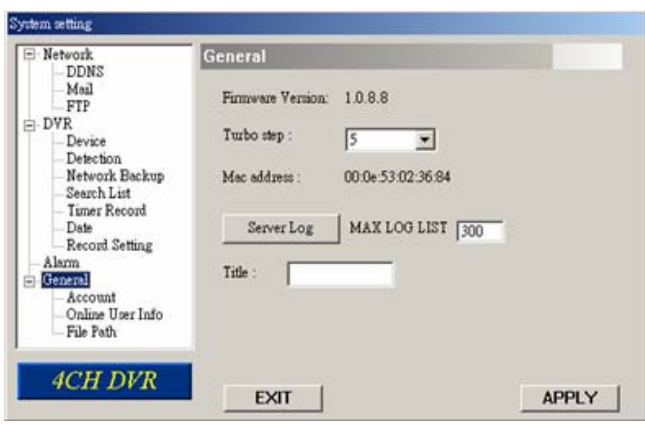
① Get the information of the DVR firmware version in this window.

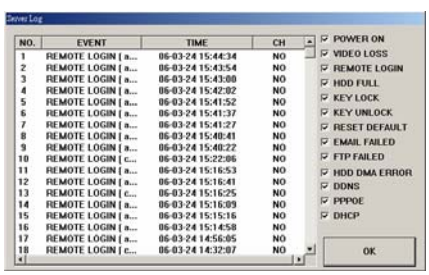
② **Select "TURBO" Step" (1 - 10)**
To speed up menu selection or the control of the PTZ camera under video web servers, users can activate "TURBO" function by clicking this button. Users are allowed to change the turbo steps from 1 to 10.
Ex: If the value of turbo step is "5", it means that when users press one of the button up/down/left/right, one click is as clicking 5 times.

③ **MAX LOG LIST**:
Set the maximum number of log list.

④ **Server Log**:
Press "Server Log" button to enter the server log list window.

⑤ Title Title:
Name the title which will be shown on the top of the AP live viewer (up to 15 characters).





Account

① Set up the user's account (Max 5 accounts), password, life time, and authority level (Max 5 users on line at the same time).

② User's level:

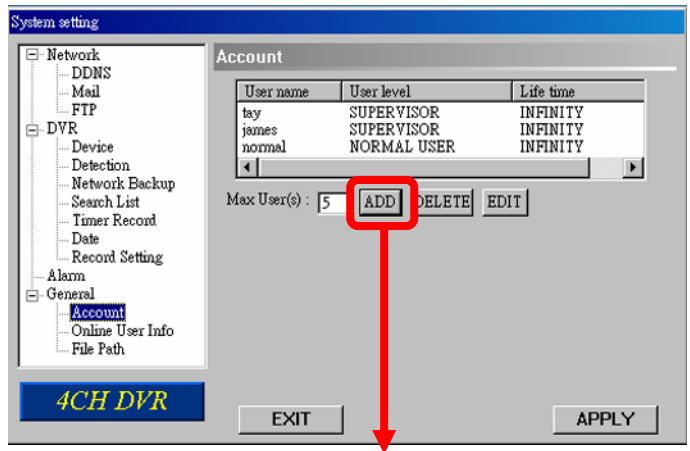
SUPERVISOR —
Control all the functions ("a", "b", "c", "d", "e" and "f").

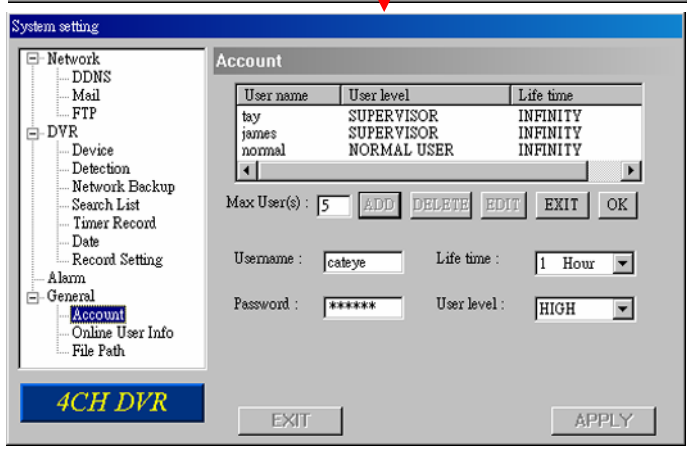
HIGH —
Control only "a", "b", "c", "d" and "e" functions, but cannot control "f" function.

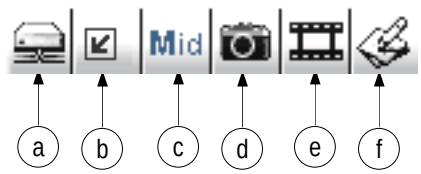
NORMAL —
Control only "a", "d", and "e" functions, but cannot control "b", "c" and "f" functions.

GUEST —
Watch the image only. Only "a" function can be used.

③ **Life time** :
According to different authority levels, different accounts can stay online for different time periods (1 Min, 5 Min, 10 Min, 1 Hour, 1 Day, INFINITY).

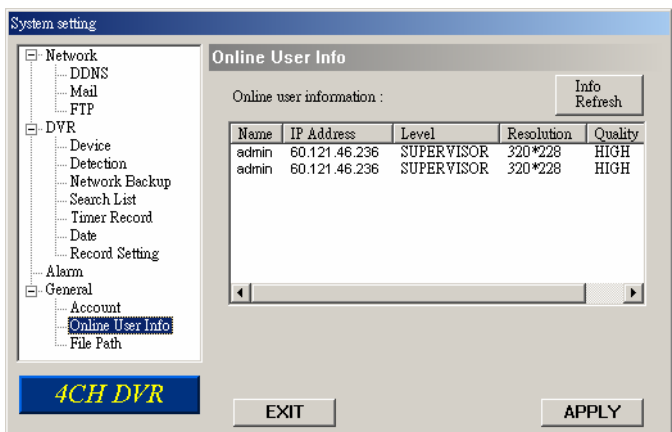






Online User Info

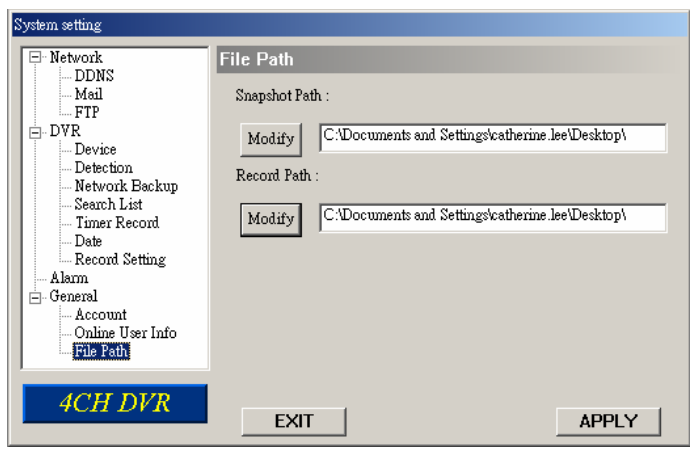
① Get all the current online users' information list (Name, IP Address, Authority Level, Resolution and Image Quality).



File Path

① **Snapshot Path**:
Assign the route for saving the snapshot picture.

② **Record Path**:
Assign the route for saving the manually recorded file.



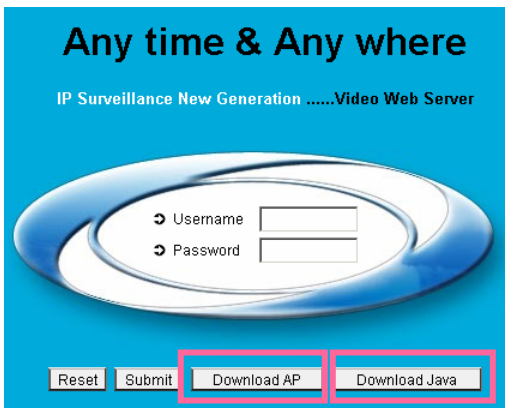
5.7 OPERATION VIA IE BROWSER

The DVR can be viewed over the network with IE web browser. Please install the licensed software AP first.

***** This function is suitable in both Windows 2000 and Windows XP *****

Step 1: Type the IP address where your DVR is located into the URL address box and press Enter. Then you'll see the following page.

If the TCP port number is not 80, see the example below.
IP address: 60.121.46.236 ; Port number: 888
→ Key in "**http://60.121.46.236:888**" into the URL address box and press Enter.

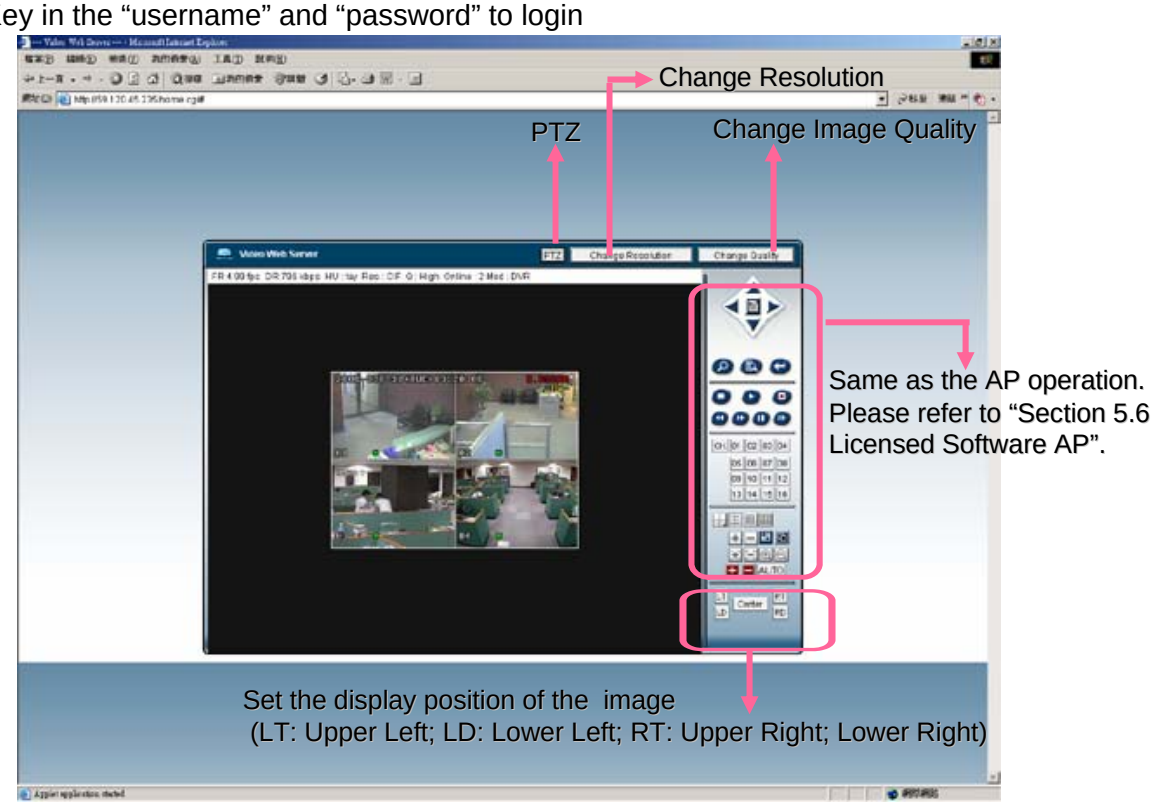


Download JAVA Program

1) Press "Download Java" button to go to JAVA website.
2) Find "Java Runtime Environment (JRE) 5.0 Update 9", and press "Download".
3) Press "Accept License Agreement".
4) Choose "Windows offline installation" or "Windows online installation".
5) Take "Windows offline installation" for an example. After downloading the setup file, run the setup file on the PC.

NOTE: Users can download the latest AP version and JAVA program from the website. The latest version of JAVA program is JRE 5.0 Update 9 at the time this manual goes to press.

Step 2: Key in the "username" and "password" to login


Change Resolution
PTZ
Change Image Quality
Same as the AP operation.
Please refer to "Section 5.6
Licensed Software AP".
Set the display position of the image
(LT: Upper Left; LD: Lower Left; RT: Upper Right; Lower Right)

6.1 FAQ

Please refer to the FAQ table below for easy troubleshooting. The table below describes some typical problems and also their solutions. Please check them before calling your DVR dealer.

PROBLEM	SOLUTION
No power	Check power cord connection.
	Confirm that there is power from the outlet.
Not working when pressing any button	Press any key and then enter the password to exit “Key Lock” mode.
Timer record is not working	Check if the “TIMER RECORD ENABLE” is set to “YES”.
No live video	Check the camera’s video cable and connections.
	Check the monitor’s video cable and connections.
	Confirm the camera is power supplied.
	Check the setting of the camera lens.
No recorded video	Check if the HDD is installed and connected properly.
DVR keeps rebooting	Make sure the power connector and HDD are connected closely, or change another suitable HDD.
HDD detection failed	Change another HDD for testing.
	Change another HDD cable for testing.
	Make sure HDD “Master”, “Slave” mode is correctly set.
Can’t detect your USB flash drive	Change another USB flash drive to test.
Can’t view the DVR images over the network with IE web browser	Update the JAVA program. Update the firmware of the software AP.
Can’t play the recorded data on my DVR	There must be at least 8192 images of recorded data for playback to work properly. If not, your DVR will stop the playback. For example, if the IPS is set to 30, the recording time should be at least 273 seconds (8192 images / 30 IPS) for the playback to work properly.

Error Code in “SYSTEM LOG”:	Meaning:
1) SYS ERR 01-YYY #define SYS_ERR_AV087_ERR	Compression error
YYY=000	Audio chip error
YYY=001- AV087	Chip for CH1-4 error
YYY=002- AV087	Chip for CH5-8 error
YYY=004- AV087	Chip for CH9-12 error
YYY=008- AV087	Chip for CH13-16 error
YYY=003(001+002)	Chips for CH1-4 & CH5-8 error, etc
2) SYS ERR 02-XXX #define SYS_ERR_AV087_BUF_FULL	Buffer is full
3) SYS ERR 03-XXX #define SYS_ERR_AV087_BUF_EMPTY	Buffer is empty
4) SYS ERR 04-XXX #define SYS_ERR_IDE_ERR	IDE interface error
5) SYS ERR 05-XXX #define SYS_ERR_SCAN_DISK	Disk scanning error
6) SYS ERR 06-XXX #define SYS_ERR_TOP_FAT_ERR	File system error
7) SYS ERR 07 *(including 08, 09, etc.)*-XXX #define	HDD error

APPENDIX #1 – INSTALL HDD

Carefully follow the steps to ensure correct installation.

*** Note: Please set the HDD to “Master Mode” or “Single Mode” ***

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Note: The images shown above may differ from the actual product appearances.

1) Open the upper cover of the DVR and screw out the bracket.

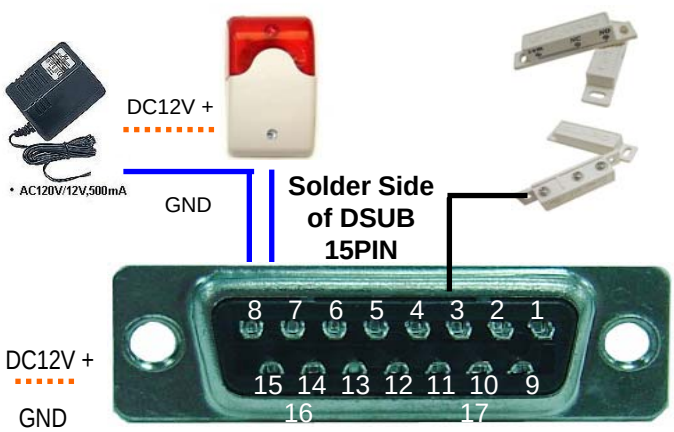
2) Screw HDD onto the HDD bracket. (Refer to Fig.1 & 2)

3) Connect the HDD to the power connector and IDE BUS (make sure to align the HDD precisely for pin connection)
And then screw the HDD bracket onto the DVR base. (Refer to Fig. 3)

4) Close the upper cover of the DVR. (Refer to Fig. 4 & 5)

APPENDIX #2 – PIN CONFIGURATION

PIN	FUNCTION	DESCRIPTION
1	RS232-TX	DVR can be controlled remotely by the keyboard of PC by using RS-232 serial communication signals.
2	RS232-RX	DVR can be controlled remotely by the keyboard of PC by using RS-232 serial communication signals.
3~6	ALARM INPUT	To connect the wire from ALARM INPUT (PIN 3 -- 6) to GND (PIN 9) connector, DVR will start recording and the buzzer will be on. When “MENU -> CAMERA -> ALARM” is set to “Low” : When the alarm input signal is “ Low ”, the unit starts to record and buzzer. When “MENU -> CAMERA -> ALARM” is set to “High” : When the alarm input signal is “ High ”, the unit starts to record and buzzer.
7	EXTERNAL ALARM NC	Under the normal operation, COM connects with NC and disconnects from NO. But when any alarm is triggered, COM disconnects with NC and connects with NO. Attention: The voltage restriction is under AV/DC 30V.
8	EXTERNAL ALARM NO.	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under AV/DC 30V.
9	GND	Signal GND.
10	RS485-B	DVR can be controlled remotely by the keyboard of PC by using RS-485 serial communication signals.
11	RS485-A	DVR can be controlled remotely by the keyboard of PC by using RS-485 serial communication signals.
12~13	PIN OFF	
14	ALARM RESET	Connecting the wire from ALARM RESET (PIN 14) to GND (PIN 9) connector will disable alarms. An external signal to ALARM RESET (PIN 14) can be used to reset both ALARM OUTPUT signal and DVR’s internal buzzer. When any alarm has been triggered, the signal becomes “Low”, and all alarm activities will be stopped. Under the normal operation, the signal remains “High”.
15	EXTERNAL ALARM COM	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under AV/DC 30V.
16~17	GND	Earth GND



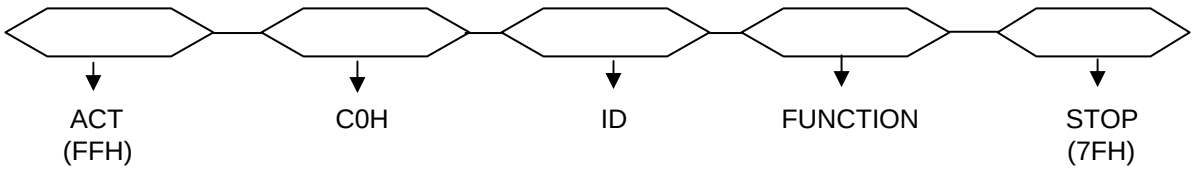
PIN Connection Application

When the magnetic contact is opened, the alarm will be triggered and the recording is on. At the same time, COM connects with NO and the siren with strobe starts wailing and flashing.

NOTE: Please go to MENU -> ADVANCE -> DETECTION -> DETECTION SETUP, and set ALARM to LOW on the local machine.

APPENDIX #3 – RS-232 PROTOCOL

1) Use PC keyboards to simulate DVR keypads.
2) Data: REMOTE PROTOCOL use 8 bit data, 1 start bit, 1 stop bit.



FUNCTION	CODE	ASCII	FUNCTION	CODE	ASCII
KEY_MENU	0x4D	M	KEY_DWELL	0x65	e
KEY_ENTER	0x0D	ENTER	KEY_CH1	0x31	1
KEY_PLUS	0x6b	k	KEY_CH2	0x32	2
KEY_MINUS	0x6d	m	KEY_CH3	0x33	3
KEY_UP	0x55	U	KEY_CH4	0x34	4
KEY_DOWN	0x4E	N	KEY_CH5	0x35	5
KEY_LEFT	0x4C	L	KEY_CH6	0x36	6
KEY_RIGHT	0x52	R	KEY_CH7	0x37	7
KEY_POWER	0x57	W	KEY_CH8	0x38	8
KEY_REC	0x72	r	KEY_CH9	0x39	9
KEY_PLAY	0x50	P	KEY_CH10	0x41	A
KEY_SLOW	0x53	S	KEY_CH11	0x42	B
KEY_ZOOM	0x5A	z	KEY_CH12	0x43	C
KEY_KEY LOCK	0x4B	K	KEY_CH13	0x44	D
KEY_AUDIO	0x64	d	KEY_CH14	0x45	E
KEY_SEARCH	0x73	S	KEY_CH15	0x46	F
KEY_PTZ_MODE	0x70	p	KEY_CH16	0x47	G
KEY_PTZ_PRESET	0x71	q	KEY_EJECT_DVD	0x6a	j
KEY_PTZ_ZOOM_IN	0x69	i	KEY_IRIS_NEAR	0x67	g
KEY_PTZ_ZOOM_OUT	0x66	f	KEY_IRIS_FAR	0x68	h
KEY_MODE	0x6f	o	KEY_PTZ_LIGHT	0x6c	l
KEY_4 CUT	0x61	a	KEY_PTZ_WIPER	0x77	w
KEY_9 CUT	0x62	b			
KEY_16 CUT	0x63	c			
KEY_SET_CHANNEL	0x6e	n			

APPENDIX #4 – RECORDING TIME TABLE

1) Recording time varies depending on the following factors:
   * Different camera quality
   * Different picture composition (such as frequency of the object movement)

Record mode	Quality	IPS	500GB record time (hour)	Record day
Frame	Best	30	127.78	5.3
		15	236.11	9.8
		7	511.11	21.3
		3	980.65	40.9
	High	30	159.72	6.7
		15	305.55	12.7
		7	633.89	26.4
		3	1209.72	50.4
	Normal	30	179.17	7.5
		15	352.78	14.7
		7	626.11	28.6
		3	1263.88	52.7
	Basic	30	222.22	9.3
		15	405.56	16.9
		7	927.78	38.7
		3	1637.5	68.2
CIF	Best	120	763.89	31.8
		60	1416.67	59
		30	2156.94	89.9
		15	4134.72	172.3
	High	120	965.28	40.2
		60	1655.55	69
		30	3398.61	141.6
		15	4833.31	201.4
	Normal	120	1120.83	46.7
		60	2166.38	90.3
		30	4105.56	171.1
		15	5154.17	214.8
	Basic	120	1563.89	65.2
		60	2494.44	103.9
		30	4472.22	186.3
		15	6681.94	278.4

APPENDIX #5 – COMPATIBLE USB FLASH DRIVE BRAND

Please upgrade the firmware of the DVR to the latest version to ensure the accuracy of the following table. If the USB flash drive is not supported by the DVR, the "USB ERROR" message will be shown on the screen.

NOTE: Please use a PC to format the USB flash drive as "FAT 32".

Manufacturer	Model	Capacity
Transcend	JetFlash 110	256MB
Transcend	JetFlash 110	512MB
Transcend	JetFlash V30	1G
Transcend	JetFlash 150	1G
Transcend	JetFlash V20	1G
Kingston	DataTraveler DTI KUSBDTI/256FE	256MB
Kingston	DataTraveler DTI KUSBDTI/256FE	512MB
PQI	Cool Drive (U339)	256MB
PQI	Cool Drive (U339)	512MB
Apacer	HANDY STENO HF202	256MB
Apacer	HANDY STENO HF202	512MB
Apacer	USB2.0 Flash Drive HS120	1G
Apacer	USB2.0 Flash Drive AH320	1G
SanDisk	Cruzer Micro	128MB
SanDisk	Cruzer Micro	256MB
SanDisk	Cruzer Micro	512MB
SanDisk	Cruzer Micro 1G	1G
ADATA	USB2.0 Flash Disk-PD1	1G
ADATA	USB2.0 Flash Disk-RB15	1G
ADATA	USB2.0 Flash Disk-PD4	1G
TOSHIBA	TransMemory	1G

APPENDIX #6 – COMPATIBLE HDD BRAND

Please upgrade the firmware of the DVR to the latest version to ensure the accuracy of the following table.

Brand Name	Model	Capacity	Rotation
HITACHI	Deskstar 7K250, HDS722516VLAT20	160GB	7200rpm
HITACHI	HDS722516VLAT80	160GB	7200rpm
HITACHI	HDS722516DLAT80	160GB	7200rpm
HITACHI	Deskstar 7K250, HDS722525VLAT80	250GB	7200rpm
HITACHI	Deskstar 511DHT0021	500GB	7200rpm
Maxtor	DiamondMax Plus 9, Model#6Y160L0	160GB	7200rpm
Maxtor	DiamondMax 10 6L160R0	160GB	7200rpm
Maxtor	DiamondMax 10 6L200R0	200GB	7200rpm
Maxtor	DiamondMax 10 6L200PO	200GB	7200rpm
Maxtor	MaxLine Plus II, Model#7Y250P0	250GB	7200rpm
Maxtor	DiamondMax 10 6L250R0-3	250GB	7200rpm
Maxtor	DiamondMax 10 HDMA6L300RO-3	300GB	7200rpm
Seagate	Barracuda 7200.7 Plus, ST3160023A	160GB	7200 rpm
Seagate	Barracuda 7200.8 ST3200826A	200GB	7200 rpm
Seagate	Barracuda 7200.8 ST3250826A	250GB	7200 rpm
Seagate	Barracuda 7200.8 ST3300831A/P	300GB	7200 rpm
Seagate	Barracuda 7200.8 ST3400832A/P	400GB	7200 rpm
Seagate	7200.9 ST3200827A/P	200GB	7200rpm
Seagate	7200.10 ST3250620A/P	250GB	7200rpm
Seagate	7200.10 ST3320620A/P	320GB	7200rpm
Western Digital	Caviar SE WD1600JB	160GB	7200rpm
Western Digital	Caviar WD2000BB-00DWA0	200GB	7200rpm
Western Digital	CaviarSE WD2500JB	250GB	7200rpm
Western Digital	Cavir RE WD2500SB-01KBC0	250GB	7200rpm

It’s all on the web

- Product Information
- User Manuals
- Quick Start Guides
- Specification Sheets
- Software Upgrades
- Firmware Upgrades

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www.lorexcctv.com

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